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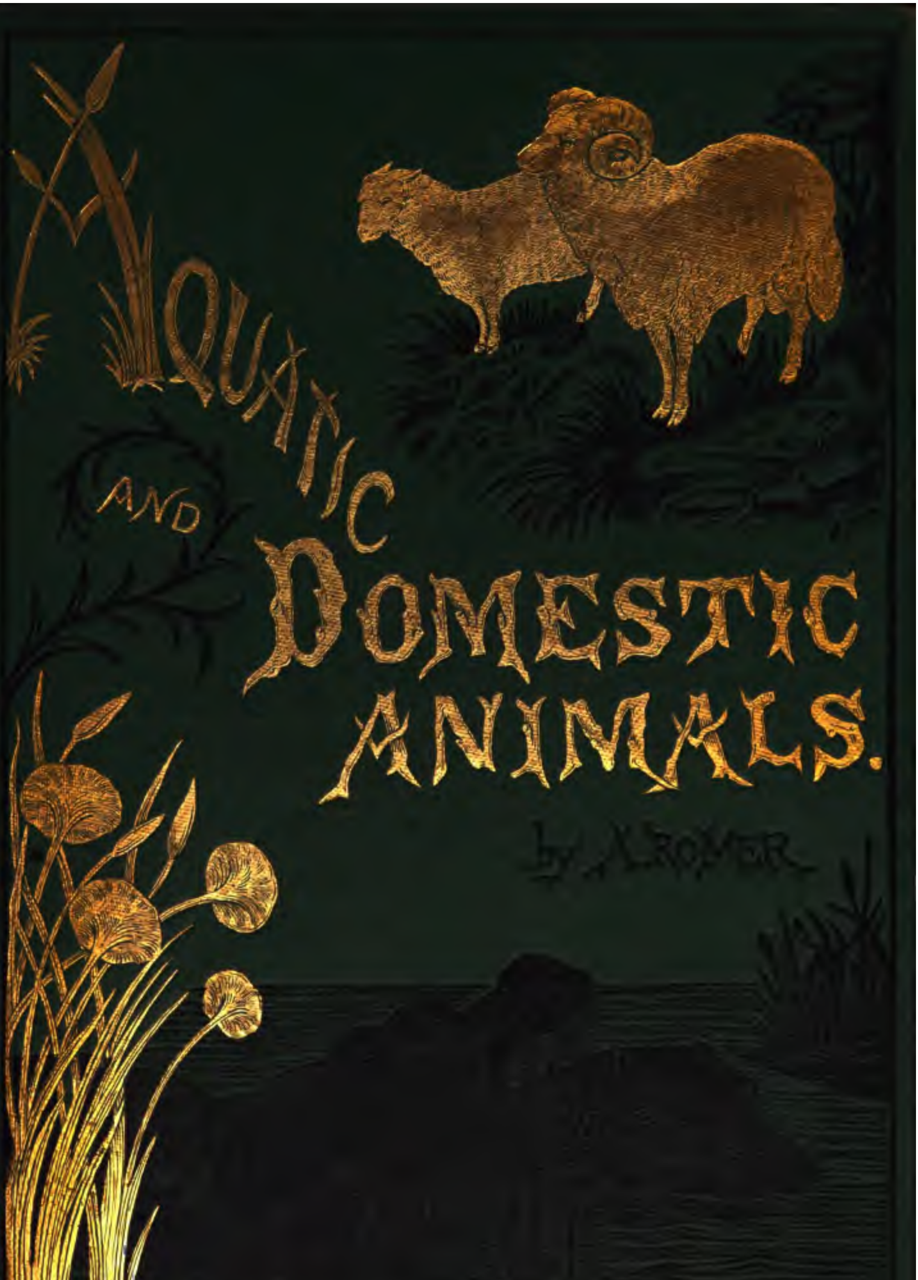


AQUATIC AND DOMESTIC ANIMALS.

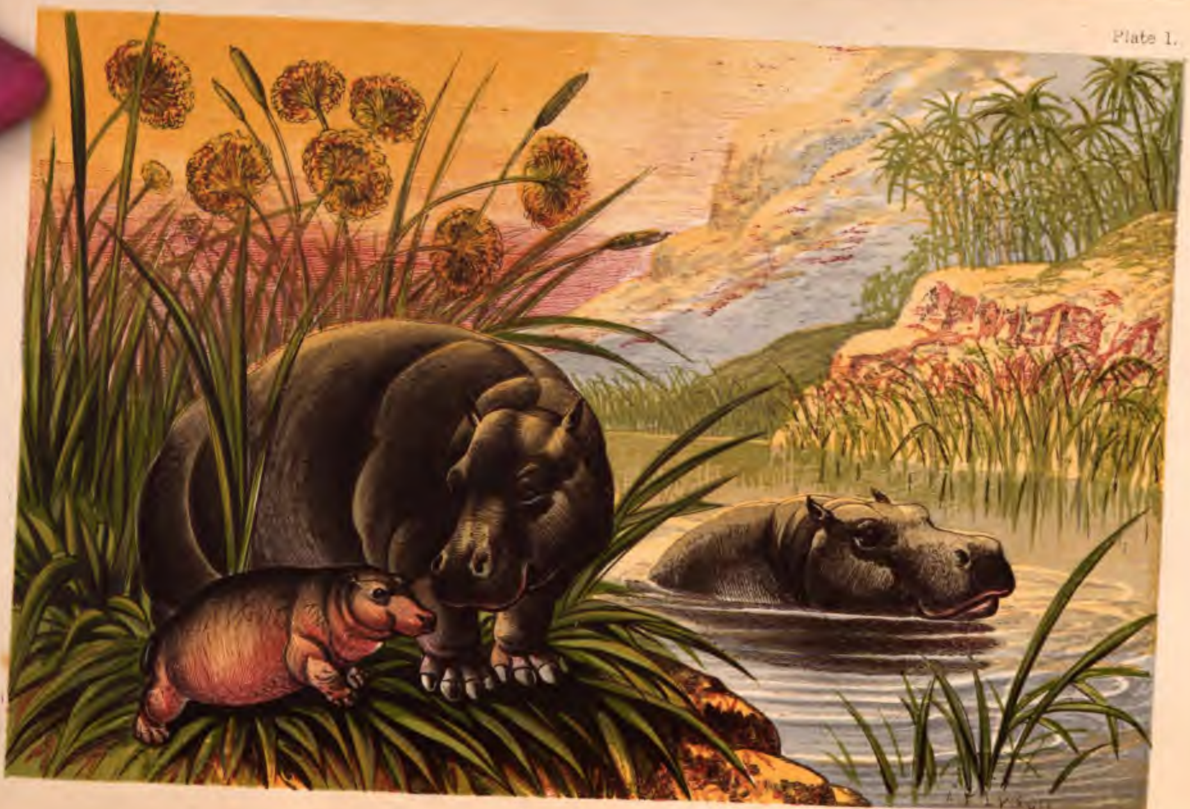
by A.L.ROVER

AQUATIC, DOMESTIC,

AND

MINOR ANIMALS.

Plate 1.



Hippopotami.

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EIGHT COLOURED PLATES [illegible]

LONDON:
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ANECDOTAL AND DESCRIPTIVE

NATURAL HISTORY.

BY

A. ROMER.

AQUATIC, DOMESTIC, AND MINOR ANIMALS.

ILLUSTRATED WITH
EIGHT COLOURED PLATES AND NUMEROUS WOOD ENGRAVINGS.

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AQUATIC, DOMESTIC, AND MINOR ANIMALS.

CHAPTER I.

AQUATIC ANIMALS.

THE term "Aquatic Animals," often as it is used, does not convey a very precise idea; it applies equally to fishes, which inhabit the water and have gills or breathing organs constructed for aquatic respiration; to whales, which live in the water though they breathe air; and to animals which are in the habit of frequenting the water, of swimming upon it, or of diving in pursuit of prey, as the gannet, the duck tribe, and others among birds; the beaver, the otter, the water rat, and others among Mammalia. Again, some reptiles, as the turtle, the sea-snake and others live in the water though they breathe air, and some only visit the water occasionally, while others avoid it. Thus, then, the term aquatic, as applied to animals, is of vague signification. We call crabs, lobsters, bivalve mollusks, cuttle-fish, and fishes aquatic; they are truly so; they respire water. We call whales aquatic; they are so in a modified sense, for they respire air; but seals, otters, beavers, &c., though they habitually frequent the water, and are expressly formed for progression in it, are not truly aquatic; they repose, they breed, they rest upon the land. Thus, when we speak of Aquatic Mammalia, including under the term whales, otters, and beavers—how widely separated in form, structure, habits, and instinct, are the species thus designated; and how much more so, if we extend the term and say Aquatic Animals. Among Mammalia, the whales, porpoises, dugongs, and lamantins are the most truly aquatic; they are born in the wide sea, and there they exist. Next to the whales we may place the walruses and seals; these animals obtain their food in the sea, but they breed and repose on the rocks or on desolate shores; their action on land is awkward and shuffling; and they shove themselves along and seek safety in the water.

Aquatic animals live long in the water, but still they must regularly come to the surface, and they breathe precisely after the manner of their namesakes, the common dog or lion. Not that there is no distinction between their respirations, but this difference refers to time only, and not at all to method. Many of the Mammalia breathe twenty times in a minute, and every one knows he cannot long suspend this vital function; whereas the seals, instead of breathing twenty times in a minute, will occasionally not breathe once in twenty minutes. The modification of structure of those land animals which breathe air, and resort only occasionally to the water is very striking. As they are intermediate in habits, so are they likewise intermediate in structure between the purely land and purely water animals, and the degree in which their organization is modified, when compared with either of the two types, is exactly proportioned to the difference of their habits and economy. All Mammals and Reptiles, for instance, which seek their food in freshwater rivers and lakes, partake more of terrestrial than of aquatic habits. The extent of water to which they are accustomed is, in this case, very small when compared to the extent of land, and their organization differs but slightly from that of ordinary land animals; their extremities are perfectly developed and of the ordinary form, the principal difference being that their toes are united by an expanded web or membrane, which gives the paw a broad oar-like form, and thus converts it into a convenient instrument of swimming, at the same time that it scarcely interferes with the most perfect freedom of walking and running on land. Of this nature are the extremities of all the vertebrated terrestrial animals which seek their food in fresh water; the otters, beavers, &c., among Mammals: the whole order of Natatores, comprising the ducks, swans, pelicans, gulls, auks, puffins, &c., among the Birds; and the crocodiles, alligators, freshwater tortoises, and frogs among the Reptiles. All these animals are, properly speaking, web-footed, and their aquatic habits are less prominent and powerful than their terrestrial; their organs of motion, in fact, are but little different from those of common terrestrial animals. In those which frequent the salt water, on the contrary, the aquatic habits greatly predominate over the terrestrial; they live less on land than in water, and the structure of their extremities approximates more to that of purely aquatic than of terrestrial animals. Thus, the peculiar form of the extremities not only indicates the degree in which an animal is aquatic, but even the nature of the element which it frequents. If it inhabits freshwater ponds and rivers, its feet are simply webbed between the toes, but in other respects perfectly developed, and its terrestrial habits predominate over its aquatic; if, on the contrary, it inhabits the salt water, its feet are flattened into the form of fins, the hind legs are thrown backwards into the plane of the body, and the aquatic habits greatly predominate over the terrestrial. The first are, properly speaking, web-footed, and the second fin-footed.

In this portion of our work we shall describe the hippopotamus, beaver, seals, and similar aquatic animals, leaving the whales, porpoises, dugongs, and others of the order of the *Cetacea*, for our volume on Fishes.

CHAPTER II.

THE HIPPOPOTAMUS.

HIPPOPOTAMUS is the Roman name, derived from the Greek, for the River Horse, retained by modern zoologists as the generic appellation of a limited group of bulky pachydermatous or thick-skinned animals. From the earliest times to within the last century the natural history of the Hippopotamus has consisted of a tissue of errors and contradictions. Europe, neither in the middle ages, nor in more recent times, had received within her boundaries a living Hippopotamus. Our knowledge of the animal and its history was derived, therefore, from the relations of travellers, from drawings made on the spot representing it, from its preserved skin, and from its bones, brought over to this country. M. Desmoulins, from examination of skulls and bones from South Africa and from Senegal, has demonstrated that there are certainly two species, which are respectively designated *Hippopotamus Capensis* and *Hippopotamus Senegalensis,* and suggests that the Hippopotamus of the Nile may possibly be distinct from either of these. But these differences are purely anatomical, and in habits, manners, and form the Hippopotami of all parts of Africa agree with each other. Like all the aquatic Mammalia we are acquainted with, the form is round, shapeless, but smooth, and possessing no sudden angles which, while they might assist the symmetry, would offer resistance when swimming.

The Hippopotamus is exclusively restricted to Africa, and, next to the elephant, is the most bulky of quadrupeds; its huge body is supported on very short, pillar-like limbs, even lower than those of the rhinoceros, so that it almost touches the ground; indeed, its figure is altogether more clumsy than that of the latter animal. It has on each foot four toes, which are nearly equal, and terminated by small hoofs, an enormous head, terminated by a large tumid muzzle which encloses the great anterior teeth; a short tail, and small eyes and ears. The stomach is divided into many compartments.

Its hide is without hair, and though not disposed in folds, like that of the rhinoceros, is of immense thickness and density, and capable of resisting a leaden ball, being upwards of two inches thick on the back and sides. Mr. Burchell compares its colour to a light tint of India, or rather China, ink. The same traveller compares the stripping off the skin from a full-grown Hippopotamus to the rending of a ship's timbers from their ribs. It is manufactured into shields, and light taper, elastic whips, called *korbadj*. After being taken off, the skin is cut into narrow triangular strips, five or six feet long, and gradually tapering to a point; each strip is then rolled up so that the edges unite and form a sort of conical pipe, in which state they are tied fast to keep them in place, and left to dry in the sun.

Underneath the skin there is a thick layer of fat, as under the skin of the swine, and perhaps somewhat analogous to the blubber of the whale. When salted and dried it is termed by the colonists of the Cape *sea-cow's speck* (bacon) and is in high request as an article of luxury for the table; indeed, the flesh of the Hippopotamus is highly prized, and much in request, both among the natives and the colonists, and so much so that the epicures of Cape Town do not disdain to use their influence with the country farmers to obtain a preference in the sale. This fat can only be preserved by salting, for on attempting to dry it in the sun, in the same manner as the other parts of the animal, it melts away. The rest of the flesh consists entirely of lean, and is cut into large slices and dried on the bushes, enough only for present use being reserved unsalted.

From the structure of the teeth we are led to infer that the quantity of vegetable substance submitted to the action of their digestive organs must be very great in proportion to the nourishment extracted from the mass. The jaws and teeth are constructed for rudely tearing and dividing, but not comminuting the hard and tough vegetables which form the staple food of the animal. The jaws are so constructed that the process executed by them is more a bruising than a grinding process. The food, therefore, when transmitted to the stomach, has undergone but little alteration, and that organ is employed in extracting from the coarse and ill-prepared load the greatest amount of nutritive matter. The stomach of a full-grown Hippopotamus is said to be capable of containing five or six bushels, and the large intestine is of a size commensurate with such a capacity, for it is stated to be eight inches in diameter. The Hippopotamus mentioned by Mr. Burchell was considered to be only half grown, but three bushels at least of half-chewed vegetables were taken from its stomach and intestines. When we look at the enormous ripping-chisel-like canines of the lower jaw, and the lower incisors formed for uprooting, we cannot but think that such an animal must be an active agent in clearing rivers from the great water-plants which might in time, if left undisturbed, go far to convert the running stream into a sluggish swamp. The ivory of the great canine teeth is highly valued by dentists for making artificial teeth. No other ivory keeps its colour equally well. From the closeness of the ivory, the weight of the tooth is heavy in proportion to its bulk; and the article fetches, or did fetch, upon an average, about thirty shillings per pound.

It inhabits the banks and beds of the larger rivers and the inland lakes of Africa, from the Gariep to the upper Nile and its tributary branches. It is not, however, exclusively restricted to fresh waters, and Dr. Smith thinks it difficult to decide whether it gives preference to the river or the sea for its abode during the day. When the opportunity of choosing the river or the sea existed, he found that some selected the one and some the other. It is gregarious in its habits, and when one is wounded the troop hasten to the assistance of their companion, rendering it very dangerous to attack them in boats, which they either upset or destroy. If unprovoked, however, the Hippopotamus is stupid and harmless, and in places where fire-arms have been introduced the animals betake themselves to the water on the appearance of a human being, unless, indeed, the young are in danger, when the dam advances with fury on the aggressor. The Hippopotamus lives exclusively on grass, corn, the luxuriant herbage of marshes, and twigs. The time of feeding is principally in the night, and these enormous animals, when in the neighbourhood of cultivated lands, do incalculable damage, not only from the quantity that they actually consume, but the still greater quantity that they spoil and lay waste by their crushing bulk, so that one or two will absolutely ruin a tolerable-sized cornfield in a single night. During the day it remains concealed among the tall and dense vegetation along the borders of the water, or in the water itself, generally, indeed, the latter, to which, on the approach of danger, it has immediate recourse. It not only swims and dives with great facility, but is also capable of of walking along the bottom of the river as if on dry land.

Le Vaillant had an opportunity of watching the progress of a Hippopotamus under water at Great River. "This river," says he, "contained many Hippopotami; on all sides I could hear them bellow and blow. Anxious to observe them I mounted on the top of an elevated rock which advanced into the river, and I saw one walking at the bottom of the water. But I remarked that its colour, which when it is dry is grayish, and when it is only humid and moist appears bluish, seemed then to be of a deep blue. I killed it at the moment when it came to the surface to breathe. It was a very old female, and my people in their surprise, and to express its size, called it the 'grandmother of the river.'"

But though the river or lake is the retreat of the Hippopotamus it must not be supposed that the animal is capable of suspending respiration for an indefinite or long-continued period; on the contrary, it has to rise at short intervals to the surface in order to breathe. If beset by foes this act is instantaneous; the surface of the head appears for a single moment and then vanishes; at other times the animal is slow in its movements, and numbers are often seen quietly floating or swimming with the upper surface of the head out of the water, so as to allow the animals both to breathe and gaze around. The eyes, nostrils, and ears, are all placed nearly on the same plane, which allows the use of three senses and of respiration, with a very small portion of the animal being exposed, and a shot at the whole great bulk of the animal can scarcely ever be obtained. "One of the most interesting parts of the amusement," says Mr. Salt, "was to observe the ease with which these animals quietly dropped down to the bottom, for, the water being very clear, we could distinctly see them so low as twenty feet beneath the surface." The young Hippopotamus comes ashore with its mother for the purpose of being suckled; hence, while nursing their young these animals are more frequently seen on dry land, or in shallows, and among the reedbeds near the river's brink, than at other seasons; they are also much fiercer, and not unfrequently commence the attack, especially if suddenly interrupted. Their defence of their offspring is so determined that even in places where the animal abounds it is more difficult to obtain the young than adults.

It has generally been asserted that this huge, powerful, and, it should seem, inoffensive animal, has no enemy in the brute creation audacious enough to contend with it. Some travellers, however, have attributed this boldness to the crocodile, describing combats between them, and on this idea Sir Edwin Landseer has given a very spirited drawing in which a Hippopotamus is crushing the hard scaly sides of a crocodile, and breaking its foe into two between its tremendous jaws. There is reason, however, to believe that such combats never take place, and that no enmity subsists between the two animals. While Mr. Salt and his party were engaged shooting at the Hippopotami they frequently observed several crocodiles of an enormous size rise together to the surface of the same stream, apparently regardless of, and disregarded by, their still more enormous neighbours.

Captain Owen, during his voyage of survey on the coasts of Africa, Arabia, and Madagascar, came in frequent contact with this huge animal, which, if its sagacity and courage at all equalled its strength and invulnerability, would prove one of the most formidable opponents to be encountered in the animal kingdom. While examining a branch of the Temby river in Delagoa Bay a violent shock was suddenly felt from underneath the boat, and "in another moment a monstrous Hippopotamus reared itself up from the water, and in a most ferocious and menacing attitude rushed open-mouthed at the boat, and, with one grasp of its tremendous jaws, seized and tore seven planks from her side; the creature disappeared for a few seconds, and then rose again, apparently intending to repeat the attack, but was fortunately deterred by the contents of a musket discharged in its face. The boat rapidly filled, but, as she was not more than an oar's length from the shore, they (the crew) succeeded in reaching it before she sank. Her keel, in all probability, had touched the back of the animal, which, irritating him, occasioned this furious attack; and, had he got his upper jaw above the gunwale, the whole broadside must have been torn out. The force of the shock from beneath, previously to the attack, was so violent, that her stern was almost lifted out of the water, and Mr. Tambs, the midshipman steering, was thrown overboard, but fortunately rescued before the irritated animal could seize him. The boat was hauled up on a dry spot, and her repairs immediately commenced." That night also the English seamen constantly heard the snorting of the Hippopotami, and occasionally a splash as they rushed in and out of the water pursuing their rough pastime.

The wild Bosjesmans, whose poisoned arrows and darts cannot penetrate the thick, hard hide of the beasts, watch the places where these animals land at night to graze, and thereabout they dig large and deep pits, which they afterward most ingeniously cover over with branches, twigs, leaves, and grass. In the midst

CAPTURING THE HIPPOPOTAMUS.

of this trap they plant a stake firmly in the ground, and on the sharp end of this their ponderous victim falls and transfixes itself. Besides the Hippopotamus, the rhinoceros, and sometimes even the wary elephant become the prey of these weak savages.

Fossil Hippopotami have been found in several parts of Great Britain and Europe, but no living specimen had been seen in either since the flood until 1850. On the 11th of December, 1849, Mr. Mitchell announced to the Zoological Society that a live Hippopotamus had been obtained for the Society's Gardens in the Regent's Park, and read the following extract from a letter addressed to him by the Hon. C. A. Murray, dated Cairo, November 16th, 1849:

"It is now in a yard at the back of my house, and apparently in perfect health. It is only five or six months' old, and still lives entirely on milk. I think a fresh importation of cows will be necessary in Cairo, as our little monster takes about thirty quarts of milk daily for his share already. H. H. Abbas Pasha has been most liberal in having the animal brought here at his own expense from the White Nile. A lieutenant and a party of ten Nubian soldiers formed his escort; a boat was built on purpose for him, and the viceroy sent him to my house in charge of the chief officer of his palace. By his Highness's orders another officer with a party of soldiers is still out on the White Nile, charged with the duty of securing a young female for us." In another letter the same gentleman writes—"The Hippopotamus is quite well, and the delight of every one who sees him. He is as tame and playful as a Newfoundland puppy; knows his keepers, and follows them all over the court-yard."

The following account of its capture and habits in the Gardens is taken from Mr. Mitchell's "Popular Guide" to the menagerie of the Society. A house and two tanks were expressly built for the accommodation of this animal:

"Since the imperial exhibitions in the circus at Rome no living Hippopotamus has been imported into Europe, except the young male which the Society possesses. The difficulty of obtaining such an animal may be conjectured from the fact that, after the Viceroy of Egypt had determined to present one to the Society, it became necessary for his Highness to despatch an expedition to the Upper Nile for the purpose of making the capture, and that success was only achieved after 2000 miles of the river had been ascended. In the month of July, 1849, the chief huntsman of the party, in searching the reedy margin of an island in the White Nile called Obaysch, at last discovered a little Hippopotamus calf, which, as he conjectured, had then been born about two days. It was so small that, in his delight at having accomplished the pasha's order, he seized it in his arms, and would have carried it to the boat which waited on him, had not the slimy exudation which is lavishly poured forth from innumerable pores in the skin of the young Hippopotamus rendered it so slippery that he was entirely unable to retain his hold. The animal, having thus slipped from his grasp, all but escaped into the Nile, where the mother doubtless was lying near at hand. The hunter, however, with the presence of mind which characterises a good sportsman, seized his spear, and with the sharp side-hook, which has been in fashion in Egypt for 3000 years or more, he succeeded in arresting the headlong plunge of his prize, without inflicting greater injury upon him than a skin-wound, which is marked by the scar upon his ribs to this day. The long voyage down the river was successfully accomplished in a boat which had been built for the purpose by the viceroy's order, and 'Obaysch,' as they named the Hippopotamus from his birthplace, was safely delivered, in November, 1849, after a journey of four months, into the care of the Hon. C. A. Murray, through whose powerful influence the viceroy had been prevailed on to exert his power and assist the Society in an object for which all exertions of their own had failed.

"Obaysch spent his first winter in Cairo under the charge of his present intelligent keeper, Hamet Saaffi Canaana, a Nubian Arab whom Mr. Murray engaged for the purpose. In May, 1850, proper preparations were made, with the obliging co-operation of the directors, in the Peninsular and Oriental Steam Navigation Company's ship Ripon, for the transport from Alexandria, and on the 25th of that month the first Hippopotamus which had breathed on English soil since the deluge was landed successfully on the quay at Southampton, and liberated in the Gardens from his travelling house at 10 o'clock the same evening. On emerging from the door of it he followed Hamet, who has scarcely ever left him during the whole voyage from Cairo, into the building which had been prepared for him, and instantly indulged in a long-continued bath. The ten hours which elapsed between his removal from the steamer at Southampton and his arrival in the Regents Park is the longest period during which he has ever been without access to water.

"The slow respiration of the Hippopotamus enables him to remain for long intervals beneath the surface, and the organization both of the ears and nostrils are beautifully adapted for this condition of his existence. The enormous size to which these animals grow has been recorded by every African traveller, and is sufficiently indicated by the skulls which are found in almost every museum. An adult male in good condition, measuring five feet at the shoulder, would certainly have three times the present bulk of Obaysch, who has most probably grown quite as fast under the treatment he has experienced as he would have done in his native river.

"The principal food of the Hippopotamus in his natural state appears to be young grass, green corn when it is to be obtained, browse of shrubs, and probably some of the great water-plants which abound in the African rivers. Obaysch consumes about 100 lbs. weight daily of hay, chaff, corn, roots, and green food. For the first year he was fed almost entirely on cow's milk and Indian corn-meal finely ground."

A Hippopotamus was also about the same time exhibited in the Jardin des Plantes in Paris, but it died a few months after its arrival.

On Saturday, July 22nd, 1854, a second specimen, a female, of this interesting animal was safely deposited in the gardens of the Zoological Society. It was about four months old, and weighed above a ton. It was fed by its keeper opening its mouth with his hand, which he thrust down its throat, covered with milk and corn meal. It was ascertained that this creature was not insensible to music, and when any one of the musicians on board the vessel in which it was brought played his instrument near it, she invariably raised her head in the attitude of listening. The keeper, also an Arab snake-charmer, was in the habit of exciting the attention of his charge by a kind of musical call, which it answered by vibrating its great bulk to and fro with evident pleasure, keeping time to the measure of its keeper's song.

The female Hippopotamus gave birth to a young male about a year ago, which unfortunately lived but for a short time. The mother gave birth to a second recently, which in spite of all the care of a large circle of naturalists, in defiance of the skill of intellectual nurses whose lifelong study has been amongst animals, succumbed to the same fate that overtook its baby brother, and died on the third day after its birth, the mother, as in the former instance, refusing to suckle it, being either unable or ignorant of her maternal duties, and the youthful stranger perished from want of food. It may not be an uninteresting physiological question whether a lapse of nearly a score of years, or change of locality, have not obliterated from the memory of the parent the duties of suckling her offspring. This theory, however, becomes the more unintelligible as Nature had provided her with abundance of milk; her love for the little stranger was, moreover, very strong, and it was on account of her savageness that all efforts to separate her from the young one were fruitless; in fact, every attempt that was made, all the coquetting of her keepers, and the allurements possible under the circumstances to entice her out of her stall away from her young one, utterly failed. Had it been possible to remove her young one, an attempt might have been made to rear it by hand. Zoologists had for many years denied the possibility of such aquatic animals as the Hippopotami breeding in captivity, and we believe that the mother of the present celebrity is the only instance of the kind on record. This, the second birth in captivity, proves that the race can be artificially propagated, and apart from its value to science, Hippopotamus breeding would be a source of great wealth to the Zoological Gardens, for there is actually a great demand for Hippopotami, and Mr. Frank Buckland estimates the net profit on each one that could be sold at one year old as over £400.

The Hippopotamus is regarded by most commentators as the behemoth of the Scripture (see the Book of Job, ch. xl), and several expressions tend to confirm this idea. "The shady trees cover him with their shadow; the willows of the brook compass him about." "He eateth grass as an ox." "He trusteth that he can draw up Jordan into his mouth." "His nose pierceth through snares."

CHAPTER III.

THE WALRUS.

THE Walrus, Morse, or Sea-Horse (*Trichecus Rosmarus*), forms a connecting link between the Mammalia of the land and those of the water, corresponding in some of its characters both with the bullock and the whale. It is often seen of the size of a great ox, and sometimes exceeds the bulk of the gigantic elephant. The genus contains but one species. The head, well proportioned to the body, is round and obtuse; the eyes are small and brilliant; there are no external ears, and the orifice is placed far back on the head; the nostrils are large, somewhat round, and placed on the upper part of the snout. The most remarkable feature, however, in its countenance is its great muzzle, produced by the bony structure being formed for the reception of the tusks; these project from eighteen inches to two feet, and diverge at their points. The length of the tusks when cut out of the skull is commonly from fifteen to twenty inches, though they are sometimes almost thirty, and their weight is from five to ten pounds, and some have been found on the shores of the icy sea weighing twenty pounds. They are not only useful to the animal in procuring its food, but also as a weapon against its foes, of which the bear on land, and the sword-fish at sea, are amongst the most active and fierce; they are also employed in enabling the animal to raise its unwieldy bulk upon the ice. The lips are thick and are covered with great pellucid bristles as thick as a straw. The neck is short; the body, very bulky, is broadest round the chest and diminishes towards the tail, which is very short. As a defence against the extreme cold, these animals have a hide that is from an inch to two inches thick, covered with close hair; and they likewise possess, like the whale and all the northern Mammalia, a coating of oily fat, with which their bodies are completely enveloped, and which, being a bad conductor of caloric, keeps in, so to speak, the vital heat; a beautiful evidence of providential design. Thus encased they descend to the depths of the Arctic Sea and repose upon their icy beds without inconvenience. The colour, according to Fabricius, varies with the age; the young are black, they then become brown, and gradually more and more pale, till in old age they become quite white. Their limbs are short, and of an intermediate character between fins and legs; the inside of their paws are defended by a rough horny kind of coating a quarter of an inch thick, which is probably produced by the hardening of the skin in consequence of the coarse usage they receive in climbing over the ice and rocks. The fore-paws, which are a kind of webbed hand, are two sevenths of the whole length of the animal from the snout; they are from two to three feet in length, and being expansive they can be stretched to a considerable width. The hind-feet extend straight backwards, and together form a sort of tail fin; they are not, however, united, but are quite distinct from each other; their length approximates to that of the fore-paws, and the termination of each finger and toe is marked by a small nail. The Walrus is generally from twelve to fifteen feet in length, with a circumference of eight or ten, and weighs from fifteen hundred to two thousand pounds. Crantz states that it reaches a magnitude of eighteen feet in length, and nearly as much in circumference.

From their structure they are adapted in very different degrees for land and water. The latter is their more common as well as more natural element; for it all their organs are beautifully adapted, and when in it all their members have free scope. Whether descending into the depth of the sea or swimming along its surface, their members are perfectly suited for their exigencies, and hence we find Zorgdrager stating "that it is as difficult to follow the Morse with boats in rowing, as it is to follow the whale itself;" and again, when quiet, so much are they at their ease that they sleep profoundly upon the surface, and, according to Schreber, are carried along as if they were dead. Upon the land, on the contrary, they are in a strained and far less favorable condition; while at the same time it must be remembered that this sojourn is absolutely requisite, as it is on land that they form their lair, like other quadrupeds, and carry on the process of suckling. Their swimming paws, so admirably adapted for the water, are but ill

THE WALRUS.

suited for the land; and, though they make use of them for necessary transport, the operation is both awkward and irksome. "Their gait," says Martens, "is a kind of jerking; they can make considerable springs, and can advance pretty rapidly, with the help of their teeth. When they continue on land, they appear, however, and really, to a great degree, are necessarily sluggish brutes."

Their food is probably both animal and vegetable. The contents of the stomach of a Walrus, noticed by Sir Everard Home, consisted entirely of the *Fucus digitatus,* and Schreber and others affirm that it is not at all carnivorous. Fabricius and Crantz are of opinion that Walrusses feed on shell fish and marine vegetables which adhere to the bottom of the sea, and that one of the uses of their tusks is to root up their food from the spot where it grows. Buffon states that they live on fish, like the seals, especially on herrings and the smaller fishes. The Rev. Dr. Scoresby found in their stomachs shrimps, a kind of crawfish, and the remains of young seals. From these facts it would seem that the Walrus is omnivorous. The molar teeth certainly appear to be more adapted for bruising the long branches of sea-weeds, *Fucus digitatus,* which, Mr. Fisher informed Sir Everard Home, filled the stomach of the animal that he examined, than for dividing fish or flesh; and the probability is, that though the Walrus does not abstain entirely from flesh, marine plants form the bulk of its food.

Previous to the development of the tusks, their physiognomy is, of course, very different from what it subsequently becomes; and it is under these circumstances that, their countenances having a distinct resemblance to the human, they have sometimes been mistaken for men, and have thus frequently given origin to the story of the merman or mermaid. This occurs the more readily, as these animals, as well as all the aquatic Mammalia, are in the habit of rearing their heads above the water, and attentively gazing around upon ships or any other passing object. Accordingly, we find Dr. Scoresby expressly mentioning, "I have myself seen a Sea-Horse in this position, and under such circumstances that it required little stretch of imagination to mistake it for a human being. So like, indeed, was it, that the surgeon of the ship actually reported to me his having seen a man with his head just appearing above the surface of the water."

The Walrus is a native of the icy sea and Northern Ocean, Spitzbergen, Nova Zembla, Hudson's Bay, the Gulf of St. Lawrence, &c. It has been known, though very rarely, to visit the British shores. One landed in the island of Harris in the year 1817, and was speedily shot; and another was killed in Orkney in 1825. The Walrus was called the horse-whale or whale-horse, formerly, and was known in England as early as the year 890, when Octher, the Norwegian, gave an account of it to King Alfred, "having made a voyage beyond Norway for the more commoditie of fishing Horse-Whales, which have in their teeth bones of great price and excellencie, whereof he brought some at his returne to the king."

Although there is a general resemblance between the organisation of the Walrus and that of the seal, the development of the brain is not so great in the former as it is in the latter, and the Walrus appears not to be gifted with so high a degree of intelligence as the seal, though it is far from stupid. They appear to be monogamous, and consequently are exempt from the terrible combats which are the result of the jealousies of the polygamous seals. The female is said to bring forth her young, one only at a birth, either on shore or on the ice. When born the young is about the size of a year-old pig. These awkward and noisy creatures assemble together in dozens, more frequently in hundreds, and sometimes even in thousands, in the most singular manner. "The moment the first gets ashore," says Pennant, "so as to lie dry, it will not stir till another comes and forces it forwards, by beating it with its great teeth; this one is served in the same manner by the next, and so on in succession till the whole are landed, tumbling over one another and forcing the foremost for the sake of quiet to remove farther up." This tendency to herd together is well described by the illustrious Captain Cook, who was one of the first circumnavigators who gave a distinct account of this creature. He encountered them in the North Pacific Ocean, where his further progress was arrested by the impenetrable barrier of ice. "At one o'clock," we read, "we got entangled with the edge of the ice, on which lay an innumerable number of Sea-Horses. They were lying in herds of many hundreds, huddled one over the other like swine, and were roaring and braying very loud, so that in the night, or in foggy weather, they gave us notice of the vicinity of the ice before we could see it. They were seldom in a hurry to get away, till after they had been once fired at, when they would tumble over each other into the sea, in the utmost confusion. Vast numbers of them would follow and come close up to the boats, but the flash in the pan of a musket, or even the bare pointing of one, would send them down in an instant."

Their parental and filial feelings are very strong, the mother, with the most admirable self-devotion, sacrificing herself for her young, and the young showing an affection for its parent, which no animal, nor man himself, can exceed. "The female," says Captain Cook, "will defend the young one to the very last, and at the expense of her own life, whether in the water or on the ice. Nor will the young one quit the dam, though she be dead; so that if you kill one you are sure of the other." And the following incident is mentioned in his third voyage when the Resolution and Discovery were returning from Behring's Straits. "In the afternoon we hoisted out the boats and sent them in pursuit of the Sea-Horses that surrounded us. Our people were more successful than they had been before, returning with three large ones and a young one. The gentlemen who went on this party were witnesses of several remarkable instances of parental affection in these animals. On the approach of our boats towards the ice they all took their cubs under their fins and endeavoured to escape with them into the sea. Several whose young were killed and wounded, and were left floating on the surface, rose again and carried them down, sometimes just as our people were going to take them into the boat, and they might be traced bearing them to a great distance through the water, which was coloured with their blood. We afterwards observed them bringing them up at times above the surface, as if for air, and again diving under it with a dreadful bellowing. The female, in particular, whose young had been destroyed and taken into the boat, became so enraged that she attacked the cutter and stuck her tusks through the bottom of it."

Till taught by fatal experience, the Walrus seems to be a fearless animal, and to be undisturbed by the face of man; but he soon learns his lesson of distrust. "It pays no regard to a boat," says Scoresby, "except as an object of curiosity. Being sometimes taken by the harpoon when in water, if the attack fail, it often affords an opportunity of repeating it." The skin is so tough, and the lard so thick, that even the ball of a rifle scarcely ever penetrates with effect. When, however, a musket is charged with small shot, and fired in their eyes, it proves more serviceable, as, when thus blinded, the sailors can attack it without danger, and successfully use their sharp spears. The Walrus is hunted for its flesh, skin, oil, and tusks, which latter produce the finest and most valuable ivory, and are much used by the Greenlanders and other Northmen for hunting weapons, tools, and domestic instruments; by the Chinese for the many curious uses to which they turn ivory; and by Europeans for making artificial teeth. Its flesh is esteemed by the inhabitants of the Arctic regions, and is greedily eaten along with the lard, and even the skin. Among our mariners, as food it is only regarded as a makeshift. "The flesh," says Sir Edward Parry, "was found tolerably good, affording a variety amid the ordinary sea fare;" and Captain Cook says, "Being in want of fresh provisions, and numbers of Sea-Horses in sight, the boats were despatched and procured some. We lived upon them as long as they lasted, and there were few on board who did not prefer them to our salt meat." The skins are much used for shipping purposes. "In ancient times," says Dr. Hamilton, "most of the ropes in the vessels of northern countries appear to have been made of this substance, and, when cut into shreds, and plaited into cordage, it formed lines which were used for the capture of the whale; they also answer admirably for wheel-ropes, being stronger and wearing much longer than hemp. Cables, too, were wont to be manufactured from them, and the Finlanders used to pay tribute to the king in this form. When tanned, the skin is converted into soft porous leather, above an inch in thickness, but it is by no means so useful nor so durable as in its green or raw state. The oil of the Walrus is more valued than that of the whale.

They are taken both by sea and land, the former being the more dangerous enterprise. A Greenlander will never venture on the encounter without the assistance of three or four expert comrades. They employ a harpoon, which, however, from the toughness of the skin is fixed with difficulty, and hence it is not so easy an operation as the sticking of a whale. When the instrument is firmly fixed, the animal is allowed to swim about till it is wearied, and they then try to secure it and kill it with spears. But even under these circumstances the capture is not an easy one, the the animal getting roused and fighting a hard battle. "The fishers," says Zorgdrager, "aim at the eyes, which obliges the animal to turn his head, and then the fatal blow is aimed at the breast." "In this crisis," says Scoresby, "the best defence against these enraged animals is sea-sand, which being thrown into their eyes occasions partial blindness, and obliges them to disperse. Then the captured one becomes a more easy prey." Lord Shuldham gives the following description of the mode of taking them on land :—"When the herd had made some little advance from the sea, the hunters, armed with a sharp spear, under cover of night, and with the assistance of good dogs trained for the purpose, endeavour to disperse them. This attack, in the Gulf of St. Lawrence, is called 'making a cut,' and it is generally looked upon as a most dangerous adventure, it being impossible to drive them as you will, and difficult to avoid them; but as, during the darkness, they do not know their way to the sea, many fall victims. The aim is made at the throat and breast; and in this way 1500 and 1600 have been killed at a cut." The Walrus has a formidable enemy, besides man, in the polar bear, with which it is said to have frequent and desperate conflicts.

CHAPTER IV.

THE SEAL—THE COMMON SEAL—THE MARBLED SEAL—THE GREENLAND SEAL—THE ELEPHANT SEAL.

THE SEALS (*Phocæ*) comprise several species, all characterised by short limbs, elongated and tapering body, very flexible spine, and smooth, close-lying fur. The tail is short and placed between the hind paws or flippers, which are directed backwards. “The paws of these animals,” says Mr. Martin, “though expressly made for swimming, are not, it is evident, so truly paddle-like as those of the whale or porpoise; the interior pair are plainly divided into strong toes, armed with nails and webbed; the posterior limbs are feeble, but the toes are still distinguishable, and serve as supports to a large extent of web, constituting an apparatus admirably adapted for propelling the animal through the water, and calling to mind the feet of the diver (*Colymbus*) or great auk (*Alca impennis*), both as to appearance and position.” Cuvier remarks that what the Seal loses of facility of motion on land, in consequence of the shortness of its limbs, is made up to it by the swimming power given by the mobility of the spine. Steller says of the Ursine Seals, “They swim with amazing swiftness and strength, even at the rate of eight miles an hour, and when wounded in the water will seize on the boat, carry it along with great impetuosity, almost as if they were flying, and will often sink it." During the progression of Seals on land, the hind-feet are never employed, and the fore-feet not necessarily. When the Seal wishes to move forward, it bends underneath it the hinder part of its spine, so making a kind of arch, and then fixing this posterior portion, it suddenly straitens out the whole body in front, and in a repetition of this movement consists the very peculiar kind of jerking leap for which these aquatic animals are so famous. When they wish to ascend an ice island or rock, the facility with which they accomplish their object is altogether astonishing. They then make especial use of their fore-paws; and those which have claws implant them like so many grappling-irons, and, having thus secured a fixed point, they uplift their monstrous carcases with the greatest rapidity and ease. Captain Weddell remarks of the Fur Seal—"The agility of this creature is much greater than from their appearance an observer would anticipate. I have seen them, indeed, often escape from men running fast in pursuit of them;" Scoresby says "They cannot be said to walk, yet they shuffle along especially over the ice, with surprising speed;" and Steller says, "Even out of the water, especially the females, can run so rapidly that it requires a swift person to get up with them."

The Seals have the power of opening or closing their nostrils at pleasure, and the interval between their respiration is very long. This may be observed in those which are kept in confinement, and the closing appears to be effected by sphincter-like or contracting muscles acting upon valvules which shut the aperture most effectually. Such a provision is absolutely necessary for animals that pass so much of their life in the water and take their food there; for ordinarily the Seal eats in the sea, though it can eat upon land. The breathing is not only slow, but is also irregular. After opening the nostrils and making a strong expiration, the animal inspires a large quantity of air, and closes the nostrils. In the intervals of this infrequent respiration, it is evident, from the free motion of the ribs and the general bearing of the animal, that the lungs receive their regular supply of air. In a state of nature a quarter of an hour, and as much as twenty-five minutes have been known to elapse between their descent from the surface and their ascent thither for the purpose of obtaining a fresh supply of air; and in confinement they have been observed to remain asleep with the head under water for an hour at a time, and consequently without breathing during that period.

The head resembles that of a short muzzled dog, and has an expression of great intelligence and mildness. Its teeth are evidently formed, as Mr. Bell observes, "for the purpose of seizing, holding, and partially dividing the scaly and slippery fish upon which the Seal feeds; the canines are strong, but acute; the molars beset with points of various size and form, but all adapted to their piscivorous habits; and the simple stomach is in perfect harmony with such a structure." The whiskers are the great organs of touch, communicating with nerves of considerable size, and the slightest impression produces sensation. The tongue is smooth and notched at the tip, and the sense of taste is evidently well developed, as is that also of smell. The senses of hearing and of sight are also enjoyed in great perfection. The auditory nerve is very large, and though the auricular aperture is closed by a membrane, somewhat similar to that which shuts the nostrils, in order to prevent the entrance of water, yet, even while deeply immerged, these animals hear distinctly, and rise to listen to the sounds of a flute, fife, or violin, enjoying the notes, and disappearing when the melody ceases. Laing, in his account of a voyage to Spitzbergen, states that a numerous auditory of Seals would surround the vessel and follow it for miles when the violin (as was often the case) was played on deck. And Sir Walter Scott, in allusion to this singular trait in the nature of the animal, says—

> "Rude Heiskar's seals, through surges dark,
> Will long pursue the minstrel's bark."

The celebrated Orkney naturalist, Low, says—"The church of Hoy is situated near a small sandy bay, much frequented by these creatures, and I observed when the bell rang for Divine service, all the Seals within hearing swam directly for shore, and kept looking about them, as if surprised rather than frightened, and in this manner continued to wonder as long as the bell rang."

Weddell observes that in instinct the Seal is little inferior to the dog; and that its sagacity in water much exceeds that which it manifests on shore. The countenance of the Seal, and the fulness of its fine eyes, denote great intelligence, and indeed it is not only intelligent and easily domesticated, but becomes greatly attached to those who rear it and treat it kindly. Its sagacity was noticed by Pliny, who observes that it is easily taught to perform tricks, and salute persons, and answer to its name when called. "I have lately," says F. Cuvier "had occasion to witness a Seal which displayed much intellectual power. He did punctually what he was ordered. If desired to raise himself on his hind-legs, and to take a staff in his hands, and act the sentinel, he did so: he likewise at his keeper's bidding would lie down on his *right* side or on his *left,* and would tumble head over heels. He would give you either of his paws when desired and would extend his sweet lips to favour you with a kiss. He complied immediately with the wishes of his master, to whom he appeared to be peculiarly attached." A specimen of the Marbled Seal taken on the coast of France was kept several weeks in the Royal Menagerie, and is thus described by the same eminent naturalist: "Except in some monkeys, I have never known any wild animal which was more easily tamed, or attached itself more strongly: when it first came to the *Jardin des Plantes,* it endeavoured to escape, when I wished to touch it; but, in a very few days, all its apprehensions vanished: it had discovered my intentions, and rather desired my caresses than feared them. It was in the same enclosure with two small dogs, which amused themselves by frequently mounting on its back, with barking, and even biting it; and although these sports, and the vivacity of the attending movements, were little in harmony with its own actions and habits, yet it appreciated their motive and seemed pleased with them. It never offered any other retaliation than slight blows with its paws, the object of which was to encourage rather than repress the liberties taken. If the puppies escaped from the enclosure the Seal endeavoured to follow them, notwithstanding the difficulty it experienced in creeping along the ground covered with stones and rubbish. When the weather was cold, the three animals huddled closely and kindly together, that they might contribute to their mutual warmth. Often have I tried him when pressed with hunger, and he never opposed my will, and I have seen the dogs, to whom he was much attached, amuse themselves when he was feeding, by snatching the fish from his mouth, without his exhibiting any rage. On the other hand, when their mess was supplied to the Seals (for he had a companion), as they were lying in the same trough a battle was the usual result, and blows with their paws followed, and as usually happens, the more feeble and timid left the field to the stronger."

Mr. L. Edmonston states that "One in particular became so tame that he lay along the fire among the dogs, bathed in the sea, and returned to the house; but, having found his way to the byres, used to steal there unobserved and suck the cows; on this account he was discharged, and sent to his native element." And Professor Traill says, "A young Seal was brought to the house in which I resided when a boy, and lived for some time chiefly in the kitchen. It was about 2½ feet long. It sucked one's fingers readily and was fond of cow's milk, which it greedily drank. When thrown into the sea it speedily returned to the shore, and it seemed to be rather a social animal. Its favourite position was the kitchen hearth, the stone of which was elevated about four inches above the floor, and it generally laid itself so close to the embers of a peat fire, burning on the hearth, that its fur was often singed. If carried to any part of the kitchen, it speedily found its way back to the hearth-stone, moving by means of its fore feet, and moaning piteously. I am uncertain whether this singular predilection for the fire-side, in an animal whose natural element is the sea, was the effect of illness, or arose from the pleasure which these animals always seem to have in basking in warm sunshine."

Most of the species are pre-eminently gregarious, and seldom seen except in flocks, amounting sometimes to hundreds and in some instances even to many thousands. They are decidedly migratory in their habits, the great object of which appears to be the change of temperature. Very many are, from choice, inhabitants of the margins of the frozen seas towards both poles. But the line of the margin varies much with the season of the year. On the approach of the Polar winter they emerge from its dark and dreary solitude towards milder regions, and during the winter months select a more moderate climate, where they are occupied with the all-important work of bringing forth their young. "In the beginning of June," says Crantz, "they come back, young and all, like a flock of sheep. They seem to observe a certain fixed time and track, like the birds of passage, and take a route that is free from ice; therefore the ships from Spitzbergen can freely follow them. We can pretty well ascertain the day at the end of May when they will be again at Frederick Hope; and in the beginning of June at Good Hope, and so further north."

The Common Seal (*Phoca vitulina*), a good example of the group, is rather common upon the rocky coasts of Scotland and Ireland, abundant along the northern shores of Europe and America, and found in the Caspian Sea, and the fresh water lakes of Russia and Siberia. Its average length is about five feet, and its colour yellowish gray, clouded or dappled with brown and yellow. This species still frequents the estuary of the Tees, and may be seen in small herds barking on the sand-banks at low water; they emigrate to and from this locality, and are much more abundant in some years than in others. The Seal-fishing in the sea commences in autumn, and is practised by means of nets stretched across narrow sounds betwixt rocks where the Seals are in the habit of swimming. In these nets they are entangled, and are taken out either by boat, or, in those cases in which the net is left dry, by persons on foot; but it is only the young that can be thus captured, and that only during a month or two in autumn. In fact, the Seals display considerable ingenuity in evading the net, sometimes creeping out at the bottom, or jumping over it at the surface. The old ones are shot, or their recesses and caves are entered at night by boatmen with torches and bludgeons, upon which the animals, alarmed by the glare and the shouts of the men, rush tumultuously forward to sea, and as they push along in confusion and terror, they are knocked on the heads with clubs by men duly stationed for that purpose. A very slight blow on the muzzle or forehead is sufficient to kill a Seal.

The Marbled Seal (*Calocephalus discolor*) is similar in size to the Common Seal, and is found on the coasts of France, and other parts of the Continent. Its colour is blackish-brown or deep gray, marked with twisted and irregular lines of whitish gray, the under parts being lighter, and the grayish lines broader and yellower.

THE MARBLED SEAL.

Sometimes the whitish gray of the belly is more extensive, ascending to the sides.

The Greenland Seal (*Phoca Greenlandica*) is chiefly characterised by having the hair drier and closer to the hide, and more free from wool than that of the other species; each hair is flat and lustrous. Crantz says that this species, when newly born is quite white and woolly. In the first year it is cream coloured; in the second, gray; in the third, painted with stripes; in the fourth, spotted; and in the fifth, wears its half moons as the sign of its maturity. To the Greenlander Seals are indispensable, for the sea is their corn-field and the Seal-fishery their most copious harvest. "Seals," says Crantz, "are more needful to them than sheep are to us, though they supply us with food and raiment, or than the cocoa-tree to the Indian, although it presents him with meat and clothing, houses and ships; so that in case of necessity they could live upon them alone. The Seal's flesh supplies them with palatable and substantial food; the fat is sauce to their other aliment, and furnishes them with oil for light and fire, while at the same time it contributes to their wealth in every form, seeing that they barter it for all kinds of necessaries. They sew better with the fibres of Seals' sinews than with thread or silk; of the fine internal membranes they make their body raiment, and their windows; of the skins they make their buoys, so much used in fishing, and many domestic utensils, and, of the coarser kinds, their tents, and their boats of all sizes, in which they voyage and seek provisions; therefore no man can pass for a right Greenlander who cannot catch

Seals. This is the ultimate end they aspire to in all their device and labour from their childhood up. It is the only art, and in truth it is a difficult and dangerous one, to which they are trained from their infancy, by which they maintain themselves, make themselves agreeable to others, and become beneficial members of society."

The ELEPHANT-SEAL or SEA-ELEPHANT (*Macrorhinus proboscideus*) is remarkable for the nose of the male being prolonged into a kind of proboscis, which respires violently when the animal is excited, or is elongated in the form of a tube about a foot long, when it is preparing for attack and defence. When the animal is in a state of repose, the nostrils are shrunk, and the proboscis flaccid, giving the face a larger appearance. The female has no proboscis. This enormous animal, which, to use the expression of Mr. Lizars, "compared with any ordinary Seal three or four feet long, appears like an Elephant when compared to a sheep," owes its name to its size and bulk, most probably, quite as much as to the proboscis with which the male is furnished. These Seals are fond of wallowing in fresh water swamps, and resort to lakes and rivers, whose waters they drink with apparent pleasure. They sleep both afloat and on the sands of the shore; and when a flock reposes on the land, some of them keep watch, and if alarmed, descend to the sea. Their gait is very singular, the motion being a kind of crawling, during which their body trembles like a great bag of jelly. At every fifteen or twenty paces they halt, as if from fatigue. Notwithstanding their unwieldiness, however, they have been known to ascend low downs of fifteen or twenty feet elevation, in order to reach small ponds of water. The cry of the female and the young is said to resemble the lowing of an ox, but the hoarse gurgling singular voice of the male, strengthened by the proboscis, is described as being audible to a great distance, and as wild and frightful. To obtain shelter from the heat of the sun, when lying on the shore by day they cover themselves, by the aid of their paws, with the moist sand. The young weigh about 70 lbs., and are between four and five feet long at their birth, the male, even at that early period, being larger than the female. At this time it is stated that the mothers are all collected near the shore, surrounded by the males, who prevent them from returning to sea till the period of suckling is past, during which operation the female lies on her side. The young grow so rapidly that they are said to double their original dimensions in eight days, and at the end of the third year they have attained a length of from eighteen to twenty-five feet and upwards when they increase principally in fatness. They are said to live from twenty-five to thirty years. Dr. Traill says, " The sailors find the male usually surrounded with several females; and they avoid wounding him, as the females seldom abandon the males, though they see the butchery of their own sex, but will leave the shore with the flight of the male." During the breeding season, bloody battles are fought by the males, in which they are often severely wounded, but rarely killed, while the females calmly wait the issue and receive the conqueror. The skin, though not valued for its fur, is extensively used for carriage and horse harness, on account of its thickness and strength. But the oil is the great object for which the animal is hunted. They are a harmless race, and their disposition gentle and affectionate.

The fishers use in destroying them a lance twelve or fifteen feet long, with a sharp iron point of about two feet. With great address, they seize the moment when the animal raises his left fore-paw to advance, and plunging the weapon to the heart, he immediately falls down drenched in blood. The females rarely offer the least opposition, their defensive weapons being feebler still than those of the male. When attacked, they seek to flee; if prevented, they become violently agitated; their countenance assumes the expression of despair, and they weep piteously. "I have myself" says Peron, "seen a young female shed tears abundantly, whilst one of our wicked and cruel sailors amused himself at the sight, knocking out her teeth with an oar, whenever she opened her mouth. The poor animal might have softened a heart of stone; its mouth streaming with blood, and its eyes with tears." They never attack man except in defence of their young. Thus, it is recorded in Anson's Voyage, "One day a sailor being carelessly, and, we add cruelly, employed in skinning a young Sea-Elephant in its mother's presence, she came upon him unperceived, and, getting his head into her mouth, scored his skull into notches in many places, and thereby wounded him so desperately that he, though all possible care was taken of him, died in a few days."

CHAPTER V.

THE BEAVER.

THE BEAVER (*Castor fiber*) is a native of the higher regions of North America; and is also found in Asia and Europe. But this is now generally admitted to be another species, and is common along the Euphrates, and also occurs along some of the larger rivers of Europe, as the Rhone, the Danube, and the Weser. Formerly the Beaver was an inhabitant of our island, and Giraldus Cambrensis gives us a short account of their manners in Wales; but even in his time (1188) they were found only on the river Teify. Pennant says, " two or three waters in that principality still bear the name of Llyn yr Afangc, or the Beaver's Lake. I have seen two or three supposed haunts; one in the stream that runs through Nant Froncon, the other in the river Conwy, a few miles above Llanrwst; and both these places, in all probability, had been formerly crossed by Beaver-dams. But we imagine they must have been very scarce, even in earlier times. By the laws of Howeldda the price of a Beaver's skin (Croen Llostlydan, broad-tailed animal), was fixed at 120 pence, a great sum in those days."

The muzzle is short and rounded, and the ears short.

Plate 2.

Water Rat. Otter. Beavers.

The two incisor or cutting teeth of the Beaver are broad, flattened, and protected anteriorly by a layer of orange-coloured enamel, the rest of the tooth being of a comparatively soft substance, whereby a cutting chisel-like edge is obtained, and indeed no edge tool with all its combination of hard and soft metal could answer the purpose better. In fact the Beaver's incisor tooth is fashioned much upon the same principle as that followed by the tool-maker, who forms a cutting instrument by a skilful adaptation of hard and soft materials, in order to produce a good edge. The tail of the Beaver is broad, horizontally flattened, nearly oval, and covered with scales; it is of great assistance in diving and aquatic movements. There are five toes on each foot, and those of the hinder ones, which are robust, are webbed, the webs extending beyond the roots of the nails. The second toe of these last is furnished with two nails, one like those of the other toes, and another beneath it situated obliquely with a sharp edge directed downwards. There is also a less perfect double nail on the inner toe of the hind feet. On land the gait of the Beaver is awkward and shuffling, owing in part to the outward form of the hind limbs, which fits them for aquatic progression, and in part to the clumsy configuration of the body. The length of the head and body is about forty inches, and that of the caudal paddle or tail about one foot. The Beaver does not attain its full growth until three years of age, but it breeds before that time, and produces from two to six at a birth. The fur of the Beaver varies from glossy brown to almost black. White and spotted varieties of the Beaver are sometimes to be met with. The Beaver is valued not only for its fur but for a product called castor, found in certain glandular sacs, and used in medicine and perfumery. This substance is produced also by the Beaver of Europe, and was well known to the ancients. This is not the product called castor oil, which is obtained from a plant. The flesh of the Beaver is very delicious, and resembles pork in its flavour.

An animal termed the Musquash inhabiting the high regions of North America is sometimes called the Little Beaver. Its fur is valuable.

The following description of the Beaver and its habits, by Hearne is interesting, clear, simple, and free from exaggeration. "The Beavers being so plentiful, the attention of my companions was chiefly engaged on them, as they not only furnished delicious food, but their skins proved a valuable acquisition, being a principal article of trade as well as a serviceable one for clothing. The situation of the Beaver-houses is various. Where the Beavers are numerous, they are found to inhabit lakes, ponds, and rivers, as well as those narrow creeks which connect the numerous lakes with which this country abounds; but the two latter are generally chosen by them when the depth of water and other circumstances are suitable, as they have then the advantage of a current to convey wood and other necessaries to their habitations, and because in general, they are more difficult to be taken than those that are built in standing water. They always choose those parts that have such a depth of water as will resist the frost in winter, and prevent it from freezing to the bottom. The Beavers that build their houses in small rivers or creeks, in which water is liable to be drained off when the back supplies are dried up by the frost, are wonderfully taught by instinct to provide against the evil by making a dam quite across the river, at a convenient distance from their houses. The Beaver-dams differ in shape according to the nature of the place in which they are built. If the water in the river or creek have but little motion, the dam is almost straight; but when the current is more rapid, it is always made with a considerable curve, convex towards the stream. The materials made use of are drift-wood, green willows, birch, and poplars, if they can be got; also mud and stones intermixed in such a manner as must evidently contribute to the strength of the dam; but there is no other order or method observed in the dams, except that of the work being carried on with a regular sweep, and all the parts being made of equal strength. In places which have been long frequented by Beavers undisturbed, their dams, by frequent repairing, become a solid bank, capable of resisting a great force both of water and ice; and as the willow, poplar, and birch generally take root and shoot up, they by degrees form a kind of regular planted hedge, which I have seen in some places so tall that birds have built their nests among the branches.

"The Beaver-houses are built of the same materials as their dams, and are always proportioned in size to the number of inhabitants, which seldom exceeds four old and six or eight young ones; though by chance, I have seen above double the number. Instead of order or regulation being observed in rearing their houses, they are of a much ruder structure than their dams; for, notwithstanding the sagacity of these animals, it has never been observed that they aim at any other convenience in their houses than to have a dry place to lie on; and there they usually eat their victuals, which they occasionally take out of the water. It frequently happens that some of the large houses are found to have one or more partitions, if they deserve that appellation, but it is no more than a part of the main building left by the sagacity of the Beaver to support the roof. On such occasions it is common for those different apartments, as some are pleased to call them, to have no communication with each other but by water; so that, in fact, thay may be called double or treble houses, rather than different apartments of the same house. I have seen a large Beaver-house built in a small island that had near a dozen apartments under one roof; and, two or three of these only excepted, none of them had any communication with each other but by water. As there were Beavers enough to inhabit each apartment, it is more than probable that each family knew their own, and always entered at their own doors, without any further connection with their neighbours than a friendly intercourse, and to join their united labours in erecting their separate habitations, and building their dams where required. Travellers who assert that the Beavers have two doors to their houses, one on the land side and the other next the water, seem to be less acquainted with these animals than others who assign them an elegant suite of apartments. Such a construction would render their houses of no use, either to protect them from their enemies, or guard them against the extreme cold of winter.

"So far are the Beavers from driving stakes into the ground when building their houses, that they lay most of the wood crosswise, and nearly horizontal, and without any other order than that of leaving a hollow or cavity in the middle. When any unnecessary branches project inward they cut them off with their teeth, and throw them in among the rest, to prevent the mud from falling through the roof. It is a mistaken notion that the wood work is first completed and then plastered; for the whole of their houses, as well as their dams, are, from the foundation, one mass of mud and wood mixed with stones, if they can be procured. The mud is always taken from the edge of the bank, or the bottom of the creek or pond near the door of the house; and though their fore paws are so small, yet it is held close up between them under their throat; thus they carry both mud and stones, while they always drag the wood with their teeth. All their work is executed in the night, and they are so expeditious that in the course of one night I have known them to have collected as much as amounted to some thousands of their little handfuls. It is a great piece of policy in these animals to cover the outside of their houses every fall (autumn) with fresh mud, and as late as possible in the autumn, even when the frost becomes pretty severe, and by this means it soon freezes as hard as a stone, and prevents their common enemy, the wolverine, from disturbing them during the winter; and as they are frequently seen to walk over their work, and sometimes to give a flap with their tail, particularly when plunging into the water, this has, without doubt, given rise to the vulgar opinion that they used their tails as a trowel with which they plaster their houses; whereas that flapping of the tail is no more than a custom which they always preserve, even when they become tame and domestic, and more particularly so when they are startled.

"Their food consists of a large root, something resembling a cabbage-stalk (The *Nuphar Lutea,* or common yellow water lily), which grows at the bottom of the lakes and rivers. They also eat the bark of trees, particularly those of the poplar, birch, and willow; but, the ice preventing them from getting to the land in the winter, they have not any barks to feed on in that season, except that of such sticks as they cut down in summer, and throw into the water opposite the doors of their houses; and as they generally eat a great deal, the roots above mentioned constitute a principal part of their food during the winter. In summer they vary their diet, by eating various kinds of herbage, and such berries as grow near their haunts during that season. When the ice breaks up in the spring, the Beavers always leave their houses, and rove about until a little before the fall of the leaf, when they return again to their old habitations, and lay in their winter stock of wood. They seldom begin to repair their houses till the frost commences, and never finish the outer coat till the cold is pretty severe, as hath been already mentioned. When they erect a new habitation, they begin felling the wood early in the summer, but seldom begin to build until the middle or latter end of August, and never complete it till the cold weather be set in. They have always a number of holes in the banks, which serve them as places of retreat when an injury is offered to their houses, and in general it is in those holes that they are taken. When the Beavers which are situated in a small river or creek, are to be taken, the Indians sometimes find it necessary to stake the river across, to prevent them from passing; after which they endeavour to find out all their holes or places of retreat in the banks. This requires much practice and experience to accomplish, and is performed in the following manner:—Every man being furnished with an ice-chisel lashes it to the end of a small staff about four or five feet long; he then walks along the edge of the banks, and keeps knocking his chisel against the ice. Those who are acquainted with that kind of work well know by the sound of the ice when they are opposite to any of the Beavers' holes or vaults. As soon as they suspect any, they cut a hole through the ice big enough to admit an old Beaver, and in this manner proceed till they have found out all their places of retreat, or at least as many of them as possible. While the principal men are thus employed, some of the understrappers and the women are busy in breaking open the house, which at times is no easy task, for I have frequently known these houses to be five or six feet thick, and one, in particular, was more than eight feet thick in the crown. When the Beavers find that their habitations are invaded, they fly to their holes in the banks for shelter; and on being perceived by the Indians, which is easily done by attending to the motion of the water, they block up the entrance with stakes of wood, and then haul the Beaver out of its hole, either by hand, if they can reach it, or with a large hook made for that purpose, which is fastened to the end of a long stick. In this kind of hunting, every man has the sole right to all the Beavers caught by him in the holes or vaults; and, as this is a constant rule, each person takes care to mark such as he discovers by sticking up a branch of a tree, by which he may know them. All that are caught in the house are the property of the person who finds them. The Beaver is an animal which cannot keep under water long at a time, so that when their houses are broken open, and all their places of retreat discovered, they have but one choice left, as it may be called, either to be taken in their house or their vaults. In general, they prefer the latter, for where there is one Beaver caught in the house many thousands are taken in the vaults in the banks. Sometimes they are caught in nets, and in summer very frequently in traps.

"In respect to the Beavers dunging in their houses, as some persons assert, it is quite wrong, as they always plunge into water to do it. I am the better enabled to make this assertion from having kept several of them till they became so domesticated as to answer to their name and follow those to whom they were accustomed in the same manner as a dog would do, and they were as much pleased at being fondled as any animal I ever saw. In cold weather they were kept in my own sitting-room, where they were the constant companions of the

Indian women and children, and were so fond of their company, that, when the Indians were absent for any considerable time, the Beavers discovered great signs of uneasiness, and on their return showed equal marks of pleasure by fondling on them, crawling into their laps, lying on their backs, sitting erect like a squirrel, and behaving like children who see their parents but seldom. In general, during the winter they lived on the same food as the women did, and were remarkably fond of rice and plum-pudding; they would eat partridges and fresh venison very freely, but I never tried them with fish, though I have heard they will at times prey on them. In fact there are few graminivorous animals that may not be brought to be carnivorous."

M. Geoffroy, St. Hillaire relates an anecdote of a Beaver from the Rhone, which was kept in the Paris Menagerie, proving that the European Beavers possess the same building instinct as their American brethren:—" Fresh branches were regularly put into his cage, together with his food, consisting of legumes, fruit, &c., to amuse him during the night, and minister to his gnawing propensity. He had only litter to shield him from the frost, and the door of his cage closed badly. One bitter winter night it snowed, and the snow had collected in one corner. These were all his materials, and the poor Beaver disposed of them to secure himself from the nipping air. The branches he interwove between the bars of his cage, precisely as a basket-maker would have done. In the intervals he placed his litter, his carrots, his apples, his all, fashioning each with his teeth, so as to fit them to the spaces to be filled to stop the interstices; he covered the whole with snow, which froze in the night, and in the morning it was found that he had thus built a wall which occupied two thirds of the doorway."

"When the Beaver," says Sir John Richardson, "cuts down a tree, it gnaws it all round, cutting it, however, somewhat higher on the one side than the other, by which the direction of its fall is determined. The stump is conical, and of such a height as a Beaver, sitting on his hind quarters, could make. The largest tree I observed cut down by them was about the thickness of a man's thigh (that is, six or seven inches in diameter), but Mr. Graham says that he has seen them cut down a tree which was ten inches in diameter."

The Beaver, when taken young, is easily domesticated, and becomes very docile and familiar. Mr. Broderip, in his "Note Book of a Naturalist" gives the following interesting account of a Beaver which was brought to England and tamed:—"The animal arrived in this country in the winter of 1825, very young, being small and woolly, and without the covering of long hair which marks the adult Beaver. He was the sole survivor of five or six young ones which had been shipped at the same time, and he was in a very pitiable condition. Good treatment, however, quickly restored him to health, and kindness soon made him familiar. When called by his name 'Binny,' he generally answered with a little cry, and came to his owner. The hearth-rug was his favourite haunt: there he would lie, stretched out at his ease, always near his master. Binny's instinct for building was shown as soon as he was let out of his cage into the room where it stood, and materials were placed in his way. His strength, before he was half-grown, was great; he would drag along a large sweeping-brush or a warming-pan, grasping the handle with his teeth so that the load came over his shoulder, and advancing in an oblique direction till he arrived at the point where he wished to place it. The long and large materials were always taken first; and two of the longest were generally laid crosswise, with one of the ends of each touching the wall, and the other ends projecting into the room. The inner space formed by the crossed brushes and the wall, he would fill up with hand-brushes, rush-baskets, books, boots, sticks, clothes, dried turf, or any thing he could find. As the work grew high, he supported himself on his tail, which propped him up admirably, and he would often, after laying on one of his building materials, sit over against it, appearing to consider his work, and the best mode of placing his pieces of wood or books. After he had piled up his materials in one part of the room (for he generally chose the same place), he proceeded to wall up the space between the feet of a chest of drawers which stood high enough on its legs to make the bottom of it serve as a roof for him; using for this purpose dried turf and sticks, which he laid very even, and filling up the interstices with bits of coal, hay, cloth, or anything he could pick up. This last place he seemed to intend for his own dwelling: the former work seemed to be intended for a dam. When he had walled up the space between the feet of the chest of drawers, he proceeded to carry in sticks, clothes, hay, cotton, &c., to make a nest; and when he had finished his work he would sit up under the drawers, and comb himself with the nails of his hind feet. The huge webbed hind feet of the Beaver turn in, so as to give the appearance of deformity; but if the toes were straight instead of being curved inwards as they are, the animal could not use them for the purpose of keeping his fur in order, and cleansing it from dirt and moisture. Binny generally carried small and light articles between his right fore-leg and his chin, walking on the other three legs; and such large masses as he could not grasp readily with his teeth he pushed forwards, leaning against them with his right fore-paw and his chin; he never carried anything on his tail. He was very fond of dipping his tail in water, but did not like plunging in his whole body."

CHAPTER VI.

THE OTTER.—THE WATER VOLE.—THE RUSSIAN MUSK RAT.

THE OTTER forms an aquatic representative of the family of the *Mustelidæ*, the most bloodthirsty of all the carnivora, a family which includes the weasel, the ferret (which has been known to be bold enough to attack man), and the polecat. All the members of the family are semi-plantigrade, and on account of the length of the body and the shortness of the limbs, which permit them to pass through very small openings, they are called vermiform or worm-like. Others have the same general aspect and dentition as the weasels, but are readily distinguishable from all other genera of the family by their webbed toes and horizontally flattened tails, which enable them to swim and to direct their course in the water, and pounce on their prey with great rapidity. But, although the Otter is very bloodthirsty, yet, like the family to which it belongs, it is not so much adapted for devouring flesh as are feline animals. The consequence is, however, that it destroys more fish than it devours; and in a salmon stream, for example, its destructiveness is so great as to seem to point it out as a legitimate object for extirpation to man in the universal battle for life. Its wily sagacity, and the difficulty of overtaking it, also heighten the excitement of man's natural hunting instincts. For Otter hunting man has, however, an invaluable auxiliary in the Otter-hound, which seems to be a cross between the large southern hound and the large rough terrier. Though less at home in the water he is more than a match for the Otter in strength and sagacity. As Otter-hounds should not only have good scent but take the water freely, care is necessary in obtaining a good breed. Mr. Daniel recommends a cross between the harrier and terrier. Otter hunting is far less common than formerly.

There are several species and varieties. The common English Otter varies much in size, as well as considerably in colour, some individuals measuring nearly four feet in length, while others, evidently adult, do not exceed three feet and a half, and the colour being of brown of various shades with more or less gray or brownish-white on the fore part of the neck and breast. In its general form it exhibits an evident affinity to the weasels and martens; but it differs from them in presenting peculiarities adapting it for an aquatic life. The head is depressed and widened, the muzzle short, broad, and rounded, the upper lip being very thick, and the nose flattened. The eyes are very small, as are the external ears, which have a semi-circular outline. The neck is almost as thick as the anterior part of the chest; the body very long and round; the legs short, very muscular, and exceedingly flexile; the feet with five sharp-clawed toes, which are connected by membranes extending to three fourths of their length, and the soles naked; the tail very long, muscular, thick at the base, depressed, and tapering to a point. The fur is short; the woolly hairs extremely fine, the longer flattened, sharply pointed, glossy, and stiffish on the tail. The colour of the upper parts is dark brown, sometimes blackish-brown; the sides of the head and the fore part of the neck are brownish-gray; the breast and abdomen not much lighter than the back. The eyes are so placed that whether the animal is swimming below its prey, behind it, above it, or beside it, their situation, or, at most, the least motion of the head and neck brings it within the sphere of the pursuer's vision. The whole framework of the animal, its short fin-like legs, oary feet, and rudder-like tail, enable it to make the swiftest turns, nay, almost bounds in the water according as the rapidity of its agile prey requires a sudden downward dive, an upward spring, or a side snap. The short close fine fur keeps the body at a proper temperature, and the longer and outer hairs directed backwards enable it to glide through the water noiselessly and swiftly when propelled horizontally by its webbed feet beneath the surface.

Mr. Bell states that the usual weight of a fine male English Otter is from 20 to 24lbs., and that of the female about 4lbs. less, adding, however, that Pennant records one found in 1794 in the river Lea between Stratford and Ware that weighed 40lbs.

The Otter lives almost entirely on fishes, which it pursues not only in rivers and lakes but also in the open sea; but it has been known to attack young domestic animals when fish is scarce and it is pressed by hunger. Mr. Bell states that the Otter has been known to resort far inland, to the neighbourhood of the farmyard, and attack lambs, sucking-pigs, and poultry, and Mr. Macgillivray found the stomach of one killed in June filled with a curious collection of larvæ and earthworms. In the northern parts of Scotland, and in the Hebrides and Shetland Islands, it resides among the blocks, or in the caverns along the coast, and subsists on marine fishes, seldom appearing on the streams or lakes unless in winter during very stormy weather. In the south of Scotland, and in many parts of England, it inhabits the fresh waters, and has been found on rivers at the distance of forty or fifty miles from the sea. Along the coast it finds a generally safe retreat in coves, of which the upper part is filled with blocks of rock, or beneath large stones; but on rivers and lakes it seeks refuge among the roots of trees, or burrows a hole for itself in the banks.

As an article of food, though the flesh is rank and fishy, the Otter was not rejected by the Roman Catholics. Their church permitted it to be eaten on *maigre* or fast days, and Pennant saw one in the kitchen of the Carthusians near Dijon under preparation for the dinner of the religious of that rigid order, who, by their rules, are prohibited during their whole lives from eating flesh. Mr. Macgillivray says, " I knew a man in Harris who procured a considerable number every year, when the skins were in more request than now, and who generally cooked the flesh, of which I once partook with the family. It was dark-coloured, rank, sapid enough, but not agreeably so; and under the skin is a layer of fat, as in the seals, which might render it pleasant food to a Greenlander or starving Hebridian."

When taken young the Otter may be tamed, and even taught to fish for itself, or rather will, if permitted, exercise its natural instinct.

Daniel, Bewick, and Shaw, record instances of the animal's docility in this way. Mr. Bell and Mr. Macgillivray both corroborate the facts. Goldsmith mentions an Otter which went into a gentleman's pond at the word of command, drove the fish up into a corner, and having seized on the largest brought it out of the water to its master. A gentleman residing in Berneray, in the outer Hebrides, had one that supplied itself with food, and regularly returned to the house. Mr. M'Diarmid gives an account of several domesticated Otters, one of which, belonging to a poor widow, "when led forth, plunged into the Urr or the neighbouring burns and brought out all the fish it could find." Another, kept at Corsbie House, Wigtonshire, "evinced a great fondness for gooseberries," fondled "about her keeper's feet like a pup or kitten, and even seemed inclined to salute her cheek when permitted to carry her freedoms so far." A third, belonging to Mr. Monteith, of Carstairs, was also very tame, "and, though he frequently stole away at night to fish by the pale light of the moon, and associate with his kindred by the river side, his master, of course, was too generous to find any fault with his peculiar mode of spending his evening hours. In the morning he was always at his post in the kennel, and no animal understood better the secret of 'keeping his own side of the house.' Indeed, his pugnacity in this respect gave him a great lift in the favour of the game-keeper, who talked of his feats wherever he went, and averred besides, that if the best cur that ever ran 'only daured to girn' at his *protégé* he would soon mak his teeth meet through him.' To mankind, however, he was much more civil, and allowed himself to be gently lifted by the tail though he objected to any interference with his snout, which is probably with him the seat of honour."

In some parts of India a fine species of Otter (*Lutra nair*) is trained to assist the fishermen. At Pondicherry, Bishop Heber passed a row of nine or ten very large and beautiful Otters, tethered with straw collars and long strings to bamboo stakes on the banks of the Matta Colly. Some were swimming about at the full extent of their strings, or lying half in and half out of the water; others were rolling themselves in the sun on the sandy bank, uttering a shrill whistling noise, as if in play. The bishop was told that most of the fishermen in the neighbourhood kept one or more of these animals, who were almost as tame as dogs, and of great use in fishing, "sometimes driving the shoals into the nets, sometimes bringing out the larger fish with their teeth."

To train Otters to catch fish or assist in fishing, Mr. Bell states that the following method has been recommended:—They should be procured as young as possible, and be first fed with small fish and water. Then bread and milk is to be alternated with the fish, and the proportion of the former gradually increased till they are led to live entirely on bread and milk. They are then taught to fetch and carry, as dogs are trained, and when they are brought to do this well a leather fish stuffed with wool is employed as the thing to be fetched. They are afterwards exercised with a dead fish, and chastised if they attempt to tear it. Finally, they are sent into the water after living fish.

The SEA-OTTER (*Enhydra marina*) is decidedly distinct from those of the genus *Lutra*, and is in form more adapted to an oceanic existence. This is as yet the only known species, and is a native of of the north-west coast of America, from California to 60° north latitude; and of the opposite coast of Asia, from the Yellow Sea northwards to Kamtchatka and the intermediate islands.

The Sea-Otter haunts sea-washed rocks, lives mostly in the water, and approximates to the seals more than to the otters in its habits. The food is fish, the female brings forth on land, and, notwithstanding the general marine habits of the animal it has been occasionally seen very far from the shore. The fur is thick, woolly, and very soft, with the addition of a few silky hairs ot a lustrous black ; most of the upper parts are of a deep, velvety, maroon-brown, and the anterior parts of a silvery-gray. The body is elongated, the tail short and stout, and the hinder feet very short.

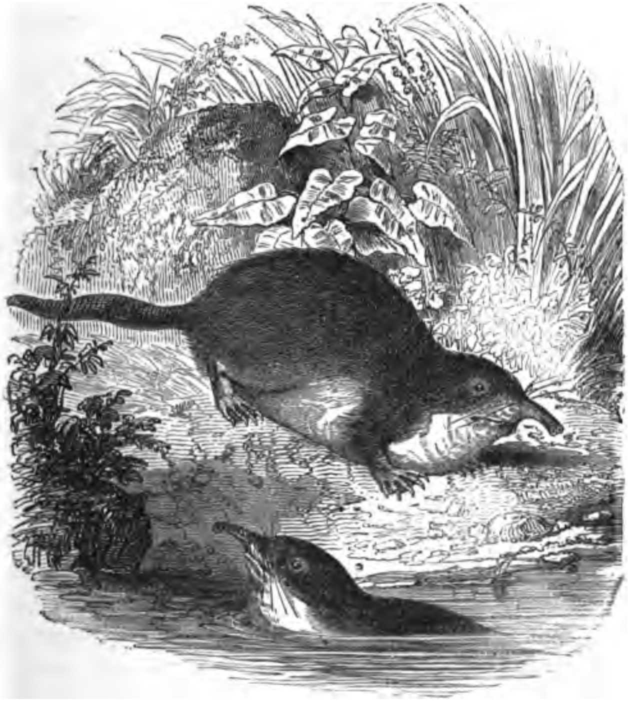
The fur was eagerly sought after formerly, and is still prized, but not so highly as formerly. Coxe quotes Pallas for the fact that the old and middle-aged Sea-

Otter skins were sold at Kiachta by the Russians to the Chinese at from 80 to 100 roubles a skin, or from £16 to £20 each, but the influx of furs into that market soon reduced their price. The weight of the largest Sea-Otters is from seventy to eighty pounds.

"The generic name, VOLE," says Mr. Macgillivray, "applied to the Arvicolæ by Dr. Fleming, seems to be preferable to Campagnol, because, although it has no meaning, it gives no erroneous idea of these animals, whereas the latter, besides being descriptively inaccurate, is merely a French word awkwardly introduced, with a pronunciation quite unenglish. The Voles are distinguished from the Mice and Rats by their larger body, broader head, and shorter tail, as well as by their grinders." The Brown Water-Vole, commonly named the Water-Rat, has the body full, the neck very short, the head short, broad, rounded, and convex above; the limbs small; the tail rather long and slender, round, slightly tapering, somewhat compressed towards the tip, and covered with short adpressed hairs. It is an inhabitant of most parts of Europe, and is generally distributed in Britain, but does not occur in many of the northern parts of Scotland. Its residence is in the banks of rivers, brooks, canals, mill-dams, and ponds, in which it forms long and tortuous burrows. It frequently betakes itself to the water, swims and lives with ease, and generally has an entrance to its retreat beneath the surface, so that in cases of danger it may effect its escape without appearing on land. In fine weather, especially in the morning and evening, it may often be seen sitting at the mouth of its hole, nibbling the grass or roots there; but in the middle of the day it usually remains under ground. It feeds entirely on vegetable substances, chiefly roots, and has been known to deposit a store even of potatoes for winter use; for it does not appear to become torpid in the cold season, although in time of snow it does not come abroad. Five or six young are produced early in summer, sometimes as early as April, in which latter case a second litter is produced at the end of summer or beginning of autumn, and deposited in a nest composed of dry grass and other vegetable material. This animal never makes its appearance in houses; nor is it injurious to man otherwise than by perforating the banks of canals. The Water-Rat is a very cleanly animal, and the flesh is said to be eaten by the French peasants on *maigre* or abstinence days.

Its retreat is, however, sometimes at a great distance from the water. The Rev. Gilbert White, of Selborne, says, "As a neighbour was lately ploughing in a dry chalky field, far removed from any water, he turned out a Water-Rat, that was curiously laid up in an hybernaculum artificially formed of grass and leaves. At one end of the burrow lay above a gallon of potatoes regularly stowed, on which it was to have supported itself for the winter. But the difficulty with me is how this amphibious Mus came to fix its winter station at such a distance from the water. Was it determined in its choice of that place by the mere accident of finding the potatoes which were planted there? or is it the constant practice of the aquatic rat to forsake the neighbourhood of the water in the colder months?" It has been said to feed on worms, frogs, small fish, and the fry of fish generally, among other animal food; and has thence been considered as an enemy to the fish-pond and trout stream, but its food is we believe exclusively vegetable, and the mistake has arisen through inaccurate observers confounding it with the common Brown Rat (*Mus decumanus*), which often haunts ditches and mill-tails, feeding freely on all sorts of animal substances, and taking the water boldly.

The Russian Musk-Rat (*Mygale moschata*), so called from its odour, is found in the River Volga, and adjacent lakes from Novgorod to Saratov. Its total length is about fifteen inches, of which the tail measures eight inches. The fur is brown or dusky above, and whitish-ash beneath. The tail is scaly, nearly naked, contracted at its base, cylindrical, convex in its middle, and very much compressed vertically at its extremity. This species does not appear to have been seen on dry land; and indeed it is broadly asserted that it never goes there, but wanders from lake to lake in fortuitous floods only. It is often seen swimming or walking under the water, and coming for air to the surface, where, in clear weather, it is apt to sport. Stagnant waters shut in by high banks are its favourite localities, and in such places it makes burrows some twenty feet in length. Its principal food is said to consist of fish, leeches, and the larvæ of water insects; but fragments of roots have been found in its stomach. Its pace is slow; but it does not seem to be torpid in winter, at which season it is often taken in nets. The holes which it makes in cliffs and banks have the entrance far beneath the lowest level of the water, and the animal works upwards, never, however, reaching the surface, but only sufficiently high to secure itself from the highest rise of the river. Fish forms part



THE RUSSIAN MUSK-RAT.

of its food; but the quadruped in its turn falls a victim to the pikes and *siluri,* whose flesh becomes so impregnated with the flavour of musk in consequence, as to be not eatable. From the region about the tail a sort of musk, resembling the genuine sort, is expressed, and the skins are put into chests and wardrobes among clothes, for the purpose of preserving them from moths. They were so common near Nischner-Novgorod that the peasants were wont to bring 500 each to market, where they sold 100 of them for a rouble.

Another small species, the Pyreneean Musk-Rat, (*Mygale Pyrenaïca*), about eight inches in length, is found along the streams at the foot of the Pyrenees.

CHAPTER VII.

THE ORNITHORHYNCHUS, OR DUCK-BILLED PLATYPUS.

THE *Ornithorhynchus Paradoxus,* which appears in so many points of its structure to approach the bird, is a native of New South Wales and Van Diemen's Land, where it frequents the banks of rivers and marshes. It was first described by Dr. Shaw, who gave it the name of the "*Duck-billed Platypus;*" but subsequently the celebrated German physiologist, Blumenbach, conferred upon it its present name of Ornithorhynchus (from two Greek words signifying *bird's bill*), which is now universally adopted. When first discovered, the description of this extraordinary animal created the greatest astonishment and doubts, and even after its skin was received in this country its anomalous structure and the accounts which accompanied it were so strange that naturalists hesitated to believe in its existence. The singular beak, which occupied the usual place of the mouth, startled the observer when it appeared as the organ of a hairy quadruped, nor was it till one or two more specimens arrived (from Governor Hunter, we believe, and addressed to Sir Joseph Banks), that zoologists were ready to allow that this beak was naturally attached to the body.

We now know, principally by the researches of Professor Owen, that the Ornithorhynchus is oviviparous, that is, producing eggs which are hatched before exclusion, as is the case with the common viper (*Vipera Borus*), when they are very small; that it suckles its young; and that its proper place is among the *Monotremata*, or Monotremes, a group to which no animal hitherto discovered belongs, excepting this and the Echidna, which see. But notwithstanding minute anatomical dissection, many points are still far from being solved satisfactorily.* "Such is the mystery," says Mr. Martin, "which yet hangs over this extraordinary creature, an animal which seems as if expressly made to show how multiform and inexhaustible are the resources of the Almighty Creator; nor can we help remarking that it appears to form a link between the more perfect Mammalia and the feathered race, uniting the forms and characters of each in its own structure, so as to be, in truth, a paradox."

The body is somewhat flattened and compressed; the head is small, and terminates in a beak, which, though broader and shorter, very closely resembles that of a duck both in form and structure, having, however, at the base of the upper and under mandible a loose leathery membrane stretching across at its union with the skull, and projecting in the form of a loose flap from each mandible, and probably serving to protect the eyes from the mud, in which the animal is constantly burrowing in search of food. The beak is flat, and

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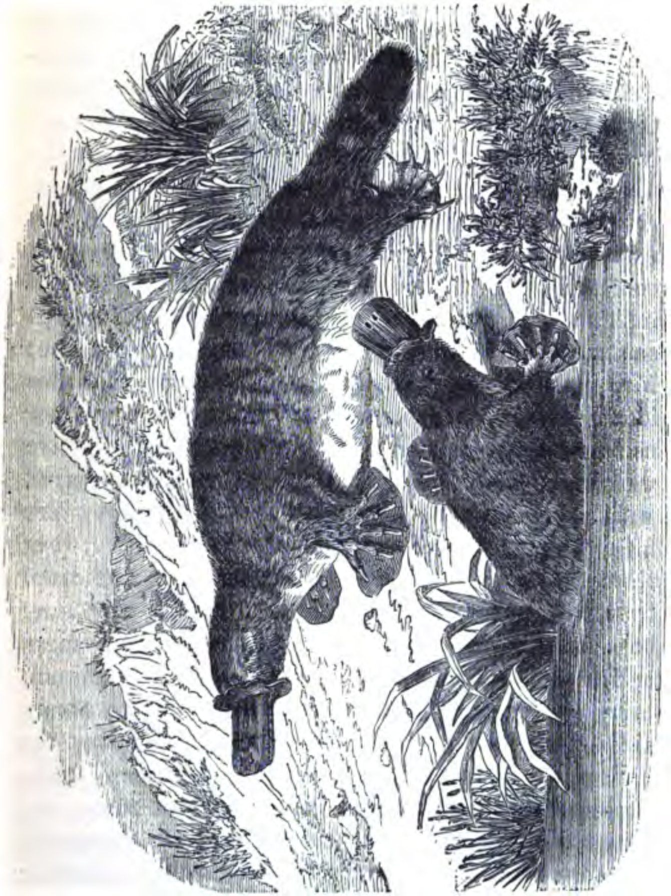
* See description of the Kangaroo in "Anecdotal and Descriptive Natural History." Price 3s. 6d. Groombridge and Sons, 5, Paternoster Row, London.



THE ORNITHORHYNCHUS, OR DUCK-BILLED PLATYPUS.

broader at the tip than at the base. The limbs are extremely short, and the fore feet are furnished with five strong and sharp nails, being connected, as well as the toes themselves, by a tough leathery web, which extends to a considerable distance behind them, forming broad and powerful oars when the animal is in the water, but folded back when it is digging in the earth. On the hind feet there are also five long and somewhat curved claws, but the web extends only to their base. In the male the hind leg is furnished with a strong sharp conical spur, bent obliquely backwards, and capable of inflicting a severe wound, and was generally considered as a weapon of offence and a very venomous one; but Mr. Bennett's experiments go far to prove that this idea is unfounded, and he is "convinced that some other use must be found for the spur than as an offensive weapon." The tail is broad, flat, depressed, and covered with harsher hairs than the body. The eyes are bright, but so small as to be scarcely visible, but their situation, high on the forehead, is indicated by an oval spot of white, beneath which they may be found buried in the fur. The ears are mere orifices, which may be easily seen in the living animal, being opened and closed at its will, but are scarcely visible in the dead. There are no true teeth, but at the back of the mouth there are small rudimentary teeth, two on each side above and below, without roots, and composed of little vertical tubes; they are somewhat square, with a broad, uneven surface, formed rather for crushing than grinding food. The males are rather larger than the females, and the average length, when full grown, is from 1 foot 6 inches to 1 foot 8 inches, exclusive of the beak, which measures 2½ inches, and the tail, measuring 5 inches.

The peculiar structure of the fur, which is of a dark chestnut colour, is thus described by Mr. Waterhouse:—"The fur is short, very dense, and rather soft to the touch, and combines the properties usually found in that of an aquatic animal and that of one whose habit is to burrow; it will readily expel both the water and the dust; it is composed of hairs of two kinds, the one forming a remarkably fine and dense fur, resembling that of the mole; the other hairs are longer, have the basal half fine, like the under fur, but the apical exposed half of each hair is dilated and flat, bent at an angle with the basal portion, and is very glossy, resembling the hairs of the seal. In these longer hairs, being thin at the base, bent near the middle, and expanded and stiff at the tip, we see a beautiful provision suited to the habits of the animal. When in the water, the flat points become closely applied together, and afford a waterproof covering to the fine under fur; and when in its underground galleries, their peculiar texture and bent form permit the animal to move either backwards or forwards without inconvenience, and without exposing the skin to the dirt." When the fur is wet, the animal has a soiled and far from attractive appearance, resembling more a lump of dirty weeds, such as are often seen floating about the rivers, than any production of the animal kingdom, and therefore, when floating on the surface, or when drifted by the stream against the stump of a tree, or among the reeds and bulrushes growing profusely near and upon the banks of the river, it would often escape observation but for its paddling motion in the water.

Mr. George Bennett communicated the following copious and interesting description of the animal and its habits to the Zoological Society:—"The Water-Moles (as these animals are called by the colonists) chiefly frequent the open and tranquil parts of the stream covered with aquatic plants, where the steep and shaded banks afford excellent situations for the excavation of their burrows. Such expanses of water are by the colonists called ponds. The animals may be readily recognised by their dark bodies, just seen level with the surface, above which the head is slightly raised, and by the circles made in the water around them by their paddling action. On the slightest alarm they instantly disappear, and, indeed, they seldom remain longer on the surface than one or two minutes, but dive head-foremost, with an audible splash, reappearing, if not alarmed, a short distance from the spot at which they dived. Their action is so rapid and their sense of danger so lively that the mere act of levelling the gun is sufficient to cause their instant disappearance, and it is, consequently, only by watching them when diving, and levelling the piece in a direction towards the spot at which they seem likely to reappear, that a fair shot at them can be obtained. A near shot is absolutely requisite; and when wounded they usually sink immediately, but quickly reappear on the surface."

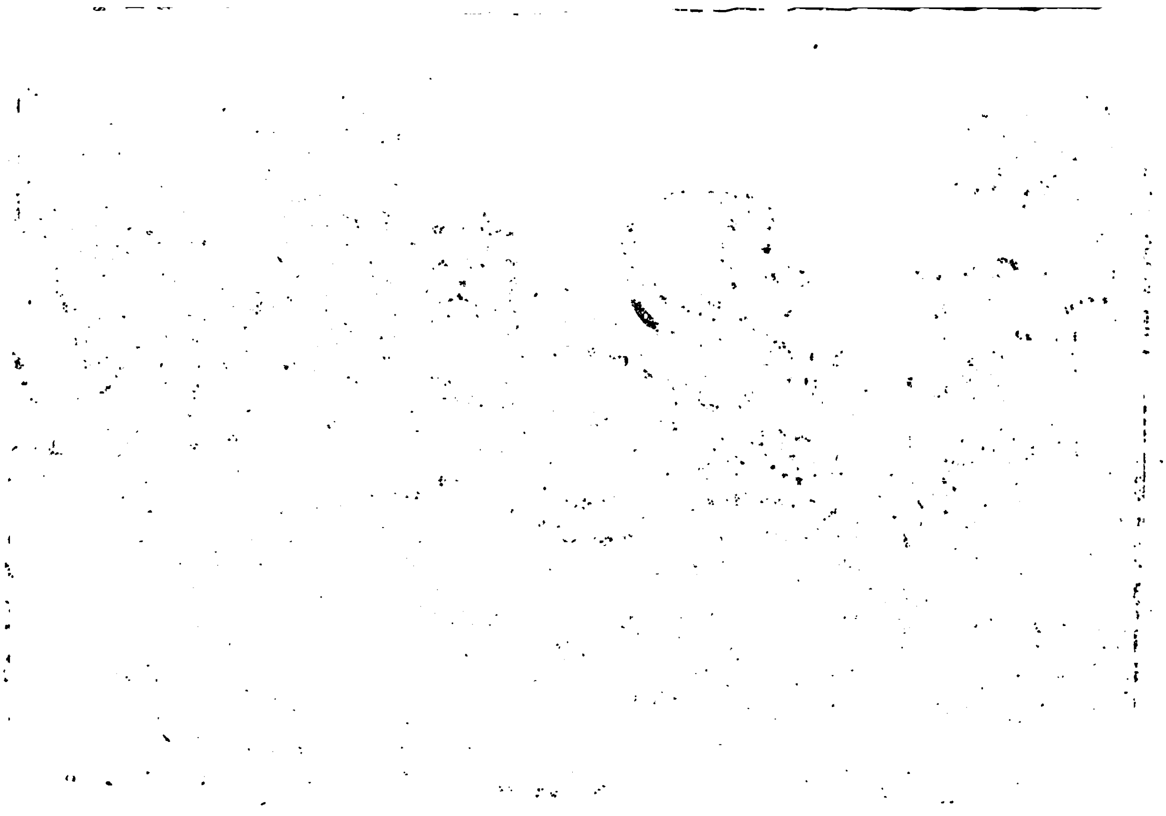
Mr. Bennett gives a description of a burrow which was traced up a bank of a river, where, amongst some long grass, the entrance was discovered, and the internal construction laid open by digging. The entrance was large, particularly when compared with the width of the passage continued from it, measuring 1 foot 3 inches in depth, and 1 foot 1 inch in breadth. As the passage receded from the entrance the burrow became narrower, being about the usual breadth of the animal when uncontracted. The distance of the entrance from the water's edge was 5 feet. It ran up the bank in a serpentine course, approaching nearer to the surface of the earth towards its termination, at which part the nest, composed of dried grass and weeds strewed over the floor, was situated, but none had as yet been made in this burrow. The termination measured 1 foot in length by 6 inches in breadth. The whole entrance to the termination was 20 feet by actual measurement. The burrows were situated above the usual river height, but did not appear to be above the extensive floods of the river which frequently take place during the winter season. "After having traced it," he says, "for the distance of 10 feet 4 inches, and having just delved down upon it so as to perceive it still continuing its course up the bank, the beak and head of a Water Mole were seen protruding for an instant from the upper part, as if it had been disturbed from its repose, and had come down to see what we were about with its habitation. It only remained for an instant, for as soon as it beheld us it immediately turned up to take refuge in that part of the burrow which yet remained unexplored. In turning round, however, it was seized by the hind leg and dragged out. The animal appeared very much alarmed when it was hawled out of its subterraneous dwelling; it uttered no sound, nor did it attempt to bite, and proved to be a full-grown female. When I held the unfortunate Platypus in my hands, its bright little eyes glistened, and the orifices of the ears were expanded and contracted alternately, as if eager to catch the slightest sound, while its heart palpitated violently with fear and anxiety." Mr. Bennett placed the animal in a cask with water, mud, and grass, in which it ran round, stratching, and making great efforts to get out, but, finding them useless, it soon became quite quiet, contracted itself into a small compass and went to sleep. The next morning, tying a long cord to one of its hind legs, he roused it and placed the animal on the bank of the river, in order to indulge it with a bathe. "It was exceedingly lively, swam in the centre of the stream, and appeared in excellent health and spirits. The water at one part of the river being very clear, I saw its motions distinctly under the water. On diving, it sank speedily to the bottom, swam there for a short distance, and then rose again to the surface; it ranged the banks, guiding itself in its progress according to the impressions received by the mandibles, which appeared to me to be used by it as very delicate organs of touch. It seemed to feed well, for whenever it inserted its beak into the mud it evidently procured some food thence, as, on raising the head, after withdrawing the beak, the mandibles were seen in lateral motion, as is usual when the animal masticates. Although several insects were basking and fluttering about the surface of the water close to it, no attempt was made to capture them, either from its not seeing them or from its preferring the food which the mud afforded. The motions of the mandibles in this animal, when seeking its food in the mud and water, are the same as those of a duck when feeding in similar situations. After feeding, it would lie sometimes on the grassy bank, and at others partly in and partly out of the water, combing and cleaning its coat, as usual, with the claws of the hind feet. After permitting it to swim, feed, and clean itself for an hour, it was replaced, although with great reluctance on its own part, in its box; it did not, however, as before, betake itself to repose, but commenced and continued a scratching on the sides of the box. This animal uttered, when disturbed from its sleep, a noise something like the growl of a puppy, but perhaps in a softer and more harmonious key. Although quiet for the greatest part of the day, it made efforts to escape, and uttered a growling noise during the night."

These animals feed on the minute *Testacea* which may be found about the water-plants and in rivers. On examining the cheek-pouches or the stomachs of these animals, Mr. Bennett always observed the food to consist of river insects, very small shell-fish, &c., which were constantly found comminuted and mingled with mud or gravel, probably to aid digestion. River weeds have also been found in their pouches, and the natives say they feed on them also. All attempts to rear it in captivity or bring it alive to Europe have as yet failed.

CHAPTER VIII.

THE DOG.

UNDER the name of Dog (*Canis*), naturalists classify not only the faithful domestic quadruped to which the term more particularly belongs, but all the animals of the carnivorous order which are in immediate alliance with it, as the wolf, the jackal, the fox, and the Cape hunting Dog or Lycaon, which constitute the representatives of a natural family. Domestic Dogs constitute a family of digitigrade carnivora, distinguished from all others by a uniformity of characters, which leaves no doubt respecting the limits, but renders subdivision the more difficult. Where all the species are so nearly alike in their structure, naturalists have been compelled to adopt distinctive characters of inferior importance, and sometimes even of a trivial nature. The parent stock of the Dog is unknown. It is, indeed, a singular fact that the origin of all our domesticated quadrupeds, from the Dog to the sheep, is enveloped in uncertainty, such modifications have the arts of man and acquired habits, continued for a long series of ages, been able to effect. We neither know its origin, nor where, nor under what circumstance, nor by what means, man has rendered the Dog dependent upon him, and so rivetted the chains



Scotch Collie.

English Mastiff.

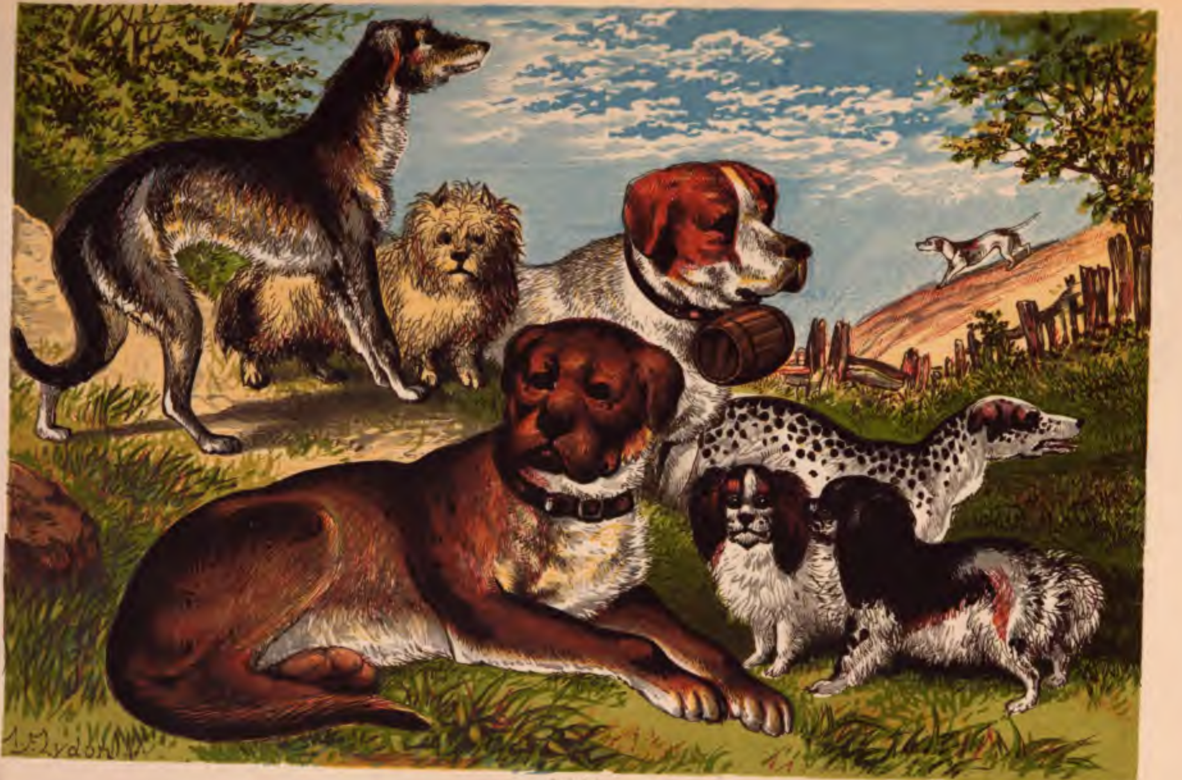
Dalmatian or Coach Dog.

CHAPTER VIII.

THE DOG.

[illegible]R the name of Dog (*Canis*), naturalists [illegible] classify not only the faithful domestic quadruped to which the term more particularly [illegible], but [illegible] the animals of the carnivorous ord[illegible] [illegible] are [illegible] immediate alliance with it, as the wolf, the [illegible]l, [illegible], and the Cape hunting Dog or Ly[illegible], [illegible] the representatives of a natural family. [illegible] constitute a family of digitigrade carni[illegible] [illegible] from all others by a uniformity of c[illegible] which leaves no doubt respecting the limits, b[illegible] subdivision the more difficult. Where all the species [illegible] so nearly allied in their structure, naturalists have been compelled to adopt distinctive characters of inferior importance, and sometimes even of a trivial nature. The parent stock of the Dog [illegible]. It is, indeed, a singular fact that the [illegible] [illegible] domesticated quadrupeds, from the Dog to [illegible], is enveloped in uncertainty, such modifica[illegible] [illegible] arts of man and acquired habits, con[illegible] [illegible] series of ages, been able to effect. [illegible] origin, nor where, nor under what [illegible] what means, man has rendered [illegible] him, and so rivetted the chains

Plate 3.



DOGS.

Scotch Deerhound. Skye Terrier. Mount St. Bernard. Dalmatian or Coach Dog. Pointer.

of its bondage that the Dog would not throw them off if it could. Some zoologists are of opinion that the breed is derived from the wolf; others that it is a familiarised jackal, others regard it as the result of the intermixture of several species closely allied to each other, among which may be enumerated the wolf and the jackal, but all agree that no trace of it is to be found in a primitive state of nature. That there were Dogs or rather animals of the canine form in Europe long ago we have evidence from their fossil remains; and that there are wild Dogs we know, India, for example, affords many of them. It is an important fact that none of the wild Dogs, however apparently living in a state of nature, have ever been found to return to the true form of wolf. "Seeing that wild Dogs, distinct from wolves, exist," says an able writer in the *National Cyclopædia*, "it is to some such animal or animals that we are inclined to attribute the origin of our Dog, whatever crosses it may have had, rather than to the wolf. From the earliest ages the wolf and Dog have been distinguished from each other, and no feral Dog has ever assumed the characters of the former." "Nor is it less difficult," observes Mr. Martin, "to say whether the endless breeds which are now found in every part of the world are all the descendants of one and the same stock, or of different but allied species; as far as we can learn from the relics of history, the race has ever been as now varied in its breeds and qualifications. It is true that several sorts of wild Dogs exist both in India and Africa; but it is impossible to say whether these are of the original stock or themselves sprung from individuals which at some former time have deserted into the woods, in a country where game abounds, and there, shifting for themselves, become the ancestors of a numerous race. The young, we believe, require no pains to domesticate; and such is certainly the case as it respects the Pariah Dogs of India, a sort of half-domesticated breed, (and half domesticated only because they have no stated owners,) which roam about the towns and villages, where they fulfil the office of scavengers, devouring the offal of the markets, and clearing the streets of refuse. Dogs similar to the Pariah race are found universally throughout the East, Turkey, and the whole of the Levant, and appear to have continued there from the utmost antiquity. Tolerated for their public utility, and associating in packs, they scour the towns and villages, and often hover around the tents, subsisting on the putrid matter and dead animals, which in those countries lie exposed, and would prove an intolerable nuisance were it not for their services. In this duty the hyæna, jackal, and vulture, also materially assist." Numerous allusions are made to this by Homer and the most ancient writers, and Lord Byron has powerfully described a fearful scene in the 'Siege of Corinth,' where Alp

> "Saw the lean dogs beneath the wall
> Hold o'er the dead their carnival,
> Gorging and growling o'er carcass and limb:
> They were too busy to bark at him!
> From a Tartar's skull they had stripped the flesh,
> As ye peel the fig when its fruit is fresh;
> And their white tusks crunched o'er the whiter skull,
> As it slipped through their jaws, when their edge grew dull,

As they lazily mumbled the bones of the dead,
When they scarce could rise from the spot where they fed;
So well had they broken a lingering fast
With those who had fallen for that night's repast.
And each scalp had a single long tuft of hair,
All the rest were shaven and bare.
The scalps were in the wild dog's maw,
The hair was tangled round his jaw.
But close by the shore, on the edge of the gulf,
There sat a vulture flapping a wolf,
Who had stolen from the hills, but kept away,
Scared by the dogs, from the human prey;
But he seized on his share of a steed that lay,
Picked by the birds, on the sands of the bay."

Mr. Martin very reasonably says, "We are strongly inclined to think that when man went out 'to till the ground from whence he was taken,' the Dog was expressly given to him as his assistant and ally. Of all animals the Dog alone is identified with his master's interests and pursuits; the rest may be said rather to endure his dominion; but the Dog is one of his family, knows his looks, his voice, his walk, rejoices at his approach, solicits his notice, and defends his person. Homer in the true spirit of nature and poetry, represents Ulysses, after his ten years' wanderings, as recognized alone, on his return to Ithaca, by his old and faithful Dog, which died with joy at his feet. So different indeed is the compact which binds the Dog to man, from that which subsists between man and other animals, and so necessary are its services in preparing the way for civilization, in subduing the desert, and securing him the enjoyment of tranquillity as to justify our opinion that this animal was never otherwise than

the domestic servant of the human race. And if such be the case, it would only add another to the proofs of the goodness of God, in alleviating the sentence which doomed man to a life of progressive labour, and to a state of advancement by his own efforts in the great work of civilization and refinement."

Cuvier observes that the domestic Dog (*Canis familiaris*, Linnæus) is distinguished by its recurved tail, and that it varies infinitely besides in stature, form, colour, and the quality of the hair. It exhibits, he adds, "the most singular, the most complete, and the most useful conquest that man has made. The whole species is become our property; each individual is entirely devoted to his master, adopts his manners, distinguishes and defends his property, and remains attached to him even unto death; and all this springs not from mere necessity, nor from constraint, but simply from reconnaissance and a true friendship. The swiftness, the strength, and the highly developed power of smelling of the Dog have made him a powerful ally of man against the other animals, and were perhaps necessary to the establishment of society. It is the only animal that has followed man all over the earth." With some few exceptions in the Pacific Ocean and the Antarctic region, Dogs are spread over the whole earth, and under all circumstances of human existence found to be the companions of man. All, it appears, are capable of some kind of domestication and of attachment. The domesticated, when suffering, yell and moan; the wild will hardly utter a cry of pain, even when in the chase they receive a severe wound, and they may be beaten to death

without a groan. With excellent memories none of the species seem to seek revenge for ill treatment, if once they have found their hostility unsuccessful and they are treated with forbearance.

It is remarkable that the Dog is seldom or never spoken of in Scripture without expressions of contempt. The most offensive language which the Jews could use towards any person, was to compare him to a "dead Dog." The reason of this seems to have been, that by the law of Moses, the Dog was pronounced to be an unclean animal, and, therefore, like the sow, was much despised among the Jews. They would be prevented by that legal enactment from discovering its great value, and from paying that attention to it which was necessary for rendering it what it now is, the favourite of young and old, on account of its various useful and estimable properties.

All the family, excepting in size, are surprisingly similar in bony structure and in their whole anatomy. Even minor peculiarities are rare and evanescent. Dogs have two sorts of hair, an under fur of a soft woolly nature, and one of longer, coarser piles forming the outer coat. The tail in general is long and hairy, reaching below the heel to the ground, or even longer. Most naturalists agree with Linnæus in the assertion, that in domestic Dogs it hangs to the left; which Sonnina justly ascribes to their action of galloping. The Dog uses its tail to express joy, hope, fear, love, gratitude, obedience, defiance, entreaty, or shame, therefore to cut off or deform its tail—as is done with some terriers and bulldogs—is to deprive the animal of what may be termed its most expressive feature. Their

the domestic servant of the human race. And if such be the case, it would only add another to the proofs of the goodness of God, in alleviating the sentence which doomed man to a life of progressive labour, and to a state of advancement by his own efforts in the great work of civilization and refinement."

Cuvier observes that the domestic Dog (*Canis familiaris*, Linnæus) is distinguished by its recurved tail, and that it varies infinitely besides in stature, form, colour, and the quality of the hair. It exhibits, he adds, "the most singular, the most complete, and the most useful conquest that man has made. The whole species is become our property; each individual is entirely devoted to his master, adopts his manners, distinguishes and defends his property, and remains attached to him even unto death; and all this springs not from mere necessity, nor from constraint, but simply from reconnaissance and a true friendship. The swiftness, the strength, and the highly developed power of smelling of the Dog have made him a powerful ally of man against the other animals, and were perhaps necessary to the establishment of society. It is the only animal that has followed man all over the earth." With some few exceptions in the Pacific Ocean and the Antarctic region, Dogs are spread over the whole earth, and under all circumstances of human existence found to be the companions of man. All, it appears, are capable of some kind of domestication and of attachment. The domesticated, when suffering, yell and moan; the wild will hardly utter a cry of pain, even when in the chase they receive a severe wound, and they may be beaten to death

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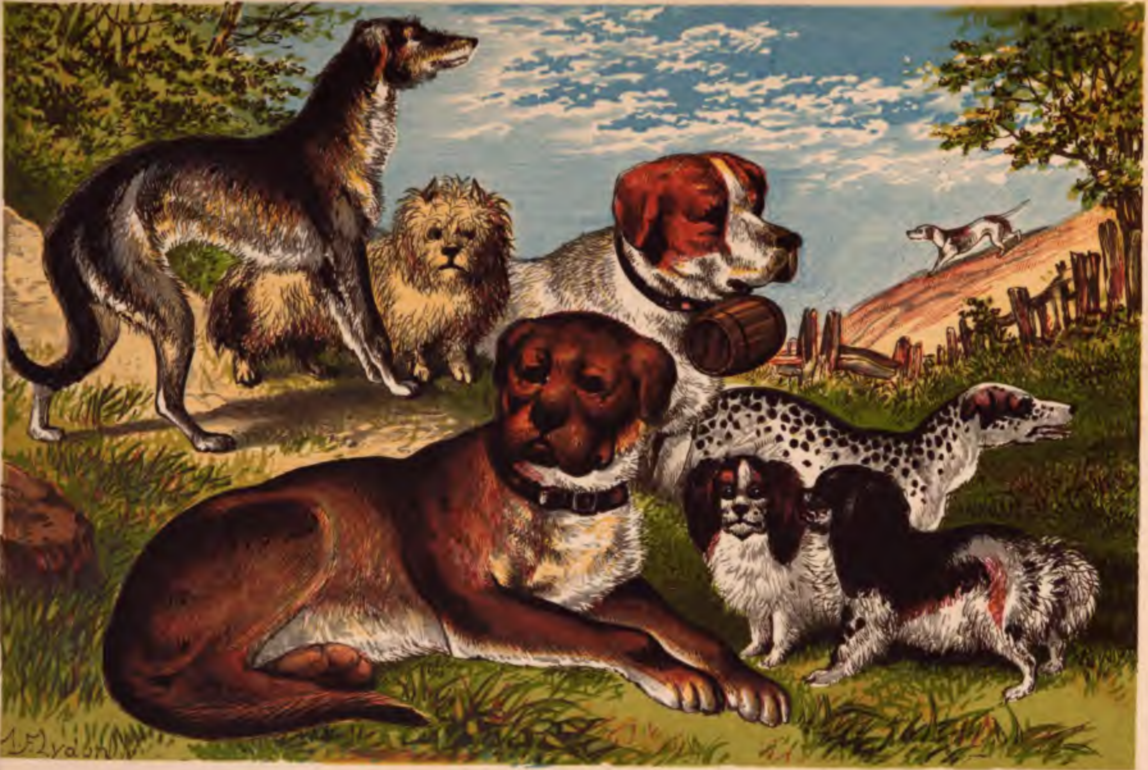
love and attachment which death alone could extinguish, and which the approach of death prompted him to show. I delight in these testimonies of the affection of Dogs to a kind master. They serve to prove what I have said elsewhere, that these animals were designed by an infinitely wise and good Being to be the companions and friends of man, clinging to him under every circumstance of poverty and distress. Their attachment, fidelity, and sagacity, should protect them from that ill-usage to which they are so constantly subjected."

In size, in the development of the limbs, in the length of the tail, in the form of the head, muzzle, and ears, in the quality and length of the hair, and in colour, the domestic Dog offers an almost innumerable variety. To many of these varieties distinguishing names have been given, as blood-hounds, deer-hounds, greyhounds, fox-hounds, beagles, harriers, otter-hounds, pointers, setters, retrievers, spaniels, poodles, Newfoundlands, St. Bernards, Dalmatians, Pomeranians, Maltese, mastiffs, bull-dogs, terriers, shepherd's dogs, &c., with many sub-varieties of some kinds, besides anomalous breeds termed mongrels, of intermingled lineage. Each variety may be regarded as a representative of its class; for, while all are faithful and sagacious, each is distinguished by the possession of some one quality not common to the rest.

The Blood-Hound, a beautifully formed animal, celebrated for its exquisite scent, extraordinary sagacity, and unwearied perseverance, was held in high esteem by our ancestors, who employed it to recover any game that had escaped wounded from the hunter, or had been stolen out of the forest; and was still more useful in



DOGS.

Scotch Deerhound. Skye Terrier, English Mastiff. Mount St. Bernard. Dalmatian or Coach Dog. King Charles' Spaniels. Pointer.

hunting thieves and robbers by their footsteps. This noble Dog is now kept only as an object of curiosity and ornament, although it is occasionally employed in the detection of deer or sheep-stealers; indeed we find it recorded in the "Sportsman's Cabinet," that between thirty and forty years ago, "the Thrapston Association for the prevention of felons in Northamptonshire have provided and trained a blood-hound for the detection of sheep-stealing. To demonstrate the unerring infallibility of this animal, a day was appointed for public trial; the person he was intended to hunt started in the presence of a great concourse of people, about ten o'clock in the forenoon, and at eleven the hound was laid on. After a chase of an hour and a half, notwithstanding a very indifferent scent, the hound ran up to the tree in which he was secreted at the distance of fifteen miles from the place of starting to the admiration and perfect satisfaction of the very great number assembled upon the occasion."

A true Blood-Hound (and the pure blood is rare) stands about twenty-eight inches in height, and is muscular, compact, and powerful; the forehead is broad, the muzzle long and deep, with pendulous lips; the nostrils are wide and well developed; the ears are ample and pendulous; the aspect is serene and sagacious, the tail is long, with an upward curve when in pursuit, at which time the hound opens with a voice deep and sonorous, that may be heard down the wind for a very long distance. The colour of the true breed is stated to be almost invariably of a reddish tan, darkening gradually towards the upper parts, till it becomes mixed with black on the back, the lower parts, limbs, and tail, being of a lighter shade, and the muzzle tawny. It is generally thought that the original stock was formed by a mixture of the deep-mouthed southern hound and the powerful old English stag-hound described by Whittaker.

The Cuban Blood-Hound was introduced into the new world by the Spaniards and employed by them in their conquest of America, and has since been reared more particularly in Cuba, whence its name. It is there used in the pursuit of murderers and felons, and also of wild bullocks, which are slaughtered by the hunters for the sake of their hides. The pure Cuban breed are of a tawny colour, with black about the muzzle; the ears are comparatively small, and the muzzle shorter than in the ordinary hound; in many points, indeed, they approach the mastiff, or bandog, especially in the form of the head. Hence, by many naturalists, and with reason, they are regarded rather as varieties of the mastiff than of the hound, or as of a mixed origin. Their height at the shoulder is about two feet. They make excellent watch-dogs, and attack both the bull and bear with determined resolution.

The Mastiff (*Canis molossus*) is of a very old English breed, now seldom seen in its original state of purity. It is the largest of any English breed of Dogs, usually standing from twenty-five to twenty-eight inches high at the shoulder, weighs about 100 lbs., and is very stoutly built, strong and active, and very sagacious. The head is well developed and large, the lips deep and pendulous on each side of the mouth, and the whole aspect noble. British Mastiffs (though, as some think, Bull-dogs) were highly prized in ancient Rome for their prowess in the combats of the amphitheatre. The Mastiff is capable of great attachment, and when kept as a guard is of unfailing vigilance, giving the alarm by its powerful bark, and never ceasing till it has roused the family or secured the intruder. It is said seldom to use violence against intruders, unless resisted; and even then will sometimes only throw down the person, and hold him for hours, without doing him further injury, until it is relieved.

The Bull-Dog is much less in size than the mastiff, but is nearly equal to him in strength, and surpasses him in fierceness. This breed is renowned for its courage, pluck, and endurance. It has strong and muscular fore-quarters and broad chest, but its hind-quarters are comparatively narrow and weak. A thorough-bred bull-dog should have round head, high skull, well-sunk forehead, large bright fierce eyes, small, square muzzle, short, small, half-erect ears, well-arched back, and straight and almost hairless tail. Those of the brindled kind are accounted the best. He has received his name on account of his natural antipathy to the bull. Without barking, he will at one seize the fiercest bull, running directly at his head; and sometimes catching hold of his nose, he will pin the bull to the ground, nor can he, without great difficulty, be made to quit his hold. Two of these dogs, let loose at once, are said to be a match for a bull, three for a bear, and four for a lion.

The Greyhound is remarkable for the keenness of

ENGLISH GREYHOUNDS.

its sight, the symmetrical strength and beauty of its form, and its great swiftness in the chase. There are many varieties of the Greyhound, from the Irish Greyhound and Highland breed to the smooth-haired southern breed, and that pretty pet, the Italian Greyhound. The Highland breed has been made familiar and celebrated by the pen of Sir Walter Scott and the pencil of Sir Edwin Landseer. The "Minstrel of the North" well indicates the character of the Greyhound for intelligence, attachment, and sagacity, qualities which some, without any good reason, have denied to this noble race. In ancient times the Greyhound marked the possessor to be a gentleman; and we find it recorded as being accepted by kings in payment, as in the case of the fine paid to King John, consisting of "500 marks, 10 horses, and 10 leashes of Greyhounds." The Greyhound has a long slim body and head, a full eye, long mouth, sharp and very white teeth, little ears, with thin gristles in them, a straight neck, full breasts, and long straight legs. The well-known old lines descriptive of the perfections of a Greyhound have never yet been superseded:—

"Headed lyke a snake,
Neckyed lyke a drake,
Fotted lyke a catte,
Taylled lyke a ratte,
Syded lyke a breme,
And chyned lyke a beme."

It is the swiftest of all the Dog kind, and can be trained for the chase when twelve months old. It courses by sight and not by scent as other hounds do. It is supposed to have reached its full growth when two years of age, and to be on the decline from the fifth or sixth year, but Dame Juliana Berners makes nine years the point at which it becomes too old for service.

The name hound is generally applied in the British islands to those varieties of the Dog which are employed in hunting the Deer, the Fox, the Hare, and the Otter, by scent. The greyhound which follows its four-footed game by the eye, is not a hound in the proper acceptation of the term adopted by sportsmen; for that appellation is confined to those varieties of the Dog which are trained to that species of chase called Hunting, which implies that the Dogs so employed follow their four-footed game by the scent principally. Nevertheless it is popularly applied to such as hunt down game by sight, as the Scottish deer-hound, and the greyhound, or gazehound. The hounds of greatest note were the blood-hound, the stag-hound, the old southern hound, the fox-hound, the harrier, and the beagle and the otter-hound. Our ancient breeds of hounds have merged into lighter and swifter races, and of these the fox-hound takes the pre-eminence in speed, vigour, and endurance, and the best and fastest horses are now required for the hunt. The beagle is a small well-proportioned hound, but of great endurance, and was formerly much valued for the pursuit of the hare. A pack of these hounds well matched and running in a close phalanx, might in the days of Sir Roger de Coverley have been covered by a sheet; but a pack of such diminutive beagles is now rarely to be seen, the larger harrier having gradually superseded it.

The Pointer (*Canis familiaris avicularis*), is a variety of Dog used in shooting, and trained to stop and point where the game lies. The old Spanish pointer was slow but very sure. These heavy but staunch Dogs are now rare, having given place to the modern, swift, thoroughbred, fine-sterned breed with a dashing style of ranging, which are of great endurance on light lands, while the old perfect Spanish pointer was seldom good for a second day's work. But this modern breed is also staunch, and it is recorded of Pluto and Juno, the two beautiful specimens depicted in Daniel's "Rural Sports," that they kept their point while Gilpin took the sketch from which the picture was painted, upwards of an hour and a quarter. Steady enough this; but on the other hand, though blood will do much, these well-bred fine-sterned Dogs have been found when tried on the moors to be, though fast, not stout hunters, and unable to stand work and weather like some of their rougher brethren.

The Setter is the name of that variety of the Dog which partakes of the characters of the pointer and spaniel. The breed originated, in all probability, between the large English Spaniel and the Spanish Pointer. The setter is less liable to the foot-sore than the pointer; but is generally considered more difficult to break. When, however, a well-broken well-bred setter is shot over frequently, no Dog trained to the gun does his work better, or is more staunch. This variety possesses a high degree of intelligence, and is capable of the strongest attachment. It was once more esteemed than at present, having been almost superseded by the pointer.

The Spaniel is a well-known variety of the Dog, and is most probably of ancient Spanish origin, whence it derives its name. In former times the Spaniel was trained to assist the falconer, and is still valuable in pheasant, woodcock, and snipe shooting. It is no small proof of the merit of the Spaniel that it has kept its ground amid all the revolutions of sporting. It is elegant in form, with long ears, and having its hair, which is of silky softness, gracefully curled or waved. Its scent is keen, and it possesses, in the fullest perfection, the good qualities of sagacity, docility, and attachment. So affectionate is, this animal, that instances have been known of its dying of grief for the loss of its master. The Spaniel may be taught a variety of tricks, such as fetching, carrying, and diving; and its docility is equal to its intelligence and feeling of attachment. The probability appears to be that all the varieties of the Spaniel, the small Water Spaniel, the Cocking Spaniel, King Charles's Spaniel, and the Blenheim Spaniel, if that breed be not the true Spaniel of King Charles I, are the result of careful breeding from the large Water Spaniel (not the Rough Water Dog which some call Water Spaniel), which seems to have been the old Springing Spaniel.

The Water Spaniel is a good swimmer, and is easily taught to retrieve or bring back the wounded game. It is therefore much employed by the sportsman, readily plunging into the water after a wild duck that may have been shot, and bringing it back without delay or injury. The Water Spaniel is about twenty inches in height at the shoulders, and proportionately stout in build, with a fine nose, fringed ears, and curled tail, covered with flowing hair to its tip. Its coat consists of short crisp curls, generally liver-coloured and white. It is strong, active, and sagacious. Its feet, like those of the Newfoundland, are broad and strong, and its body is provided with a natural oil which causes its skin to resist the action of the water. After a plunge, it gives itself a vigorous shake, and is dry in a few minutes. But after having been wet, this waterproof quality debars the Water Spaniel from the parlour, for as soon as it comes near a fire, its oily odour is disagreeably perceptible.

The King Charles Spaniel is so called from its having been a great favourite with that monarch, who was usually accompanied in his walks by several of these elegant little pets. It should have a short muzzle, long silky ears, hanging close to the head, full, bright, expressive eyes, a coat of glossy, soft, and wavy hair, well-feathered tail, and fringed legs. When the hair actually curls instead of being wavy it is considered a blemish rather than a beauty. The colours are black, brown, tan, and white in patches, the smaller it is the more valuable. The Blenheim is a similar but still smaller breed.

The Newfoundland Dog, which came originally from the island whence it derives its name, is a well-known and fine variety seldom seen in a state of purity, when it is comparatively small, but very muscular and strong, and generally black. The large and handsome Dogs, which are so often seen in this country, and pass for Newfoundland Dogs, are very different from the compact and moderate-sized animals of the pure breed. Sagacity, courage, docility, uniform good temper and fidelity, are the characteristics of both breeds of this noble race.

As water Dogs they surpass all other breeds, their feet being so formed as to enable them to swim very fast, dive easily, and bring up anything from the bottom of the water. Their zeal, their devotedness, their entire abandonment of self when they rush to the rescue of some drowning wretch, are admirable, although, in their eagerness to save, they sometimes encumber those with help who do not need it, and there have been instances where they have nearly destroyed the swimmer by their kindness. Directly they see any body, or indeed any animal whatsoever, struggling in the water, in they jump, and seem to think that it is their duty never to leave them till they have got them out. It is remarkable that this Dog, when it seizes a drowning person, shifts its grip of the clothes till it gets his head above water, as if conscious that when a man's head is free he is out of danger. These Dogs have been employed most successfully in shipwrecks, to carry ropes ashore and will work against the most heavy seas. Some of the true breed make admirable retrievers, and the great and less pure English Newfoundland Dogs, so to speak, are employed in the field for the same purpose with great success. In their native country, these Dogs are extremely useful to the settlers on the coast, who employ them to bring wood, fish, or other commodities from the interior. Three or four of them, yoked to a sledge, will draw three hundred weight of wood for several miles. In the performance of this task, they are so expert as not to need a driver. After having delivered their load they will return to the woods with their empty sledge, and are then rewarded by being fed with dried fish.

The St. Bernard Dogs are a noble breed, originally brought from Spain, and trained by the monks of the celebrated hospice or monastery of St. Bernard to discover and rescue travellers lost in the snow. The monastery is situated on the great St. Bernard, one of the chief mountain passes in the Pennine Alps, and is the most elevated fixed habitation in Europe, and close upon the limits of perpetual snow. They are sent out with an apparatus fastened to their collars, containing refreshments for the use of the wanderers, and directions to them to follow the footsteps of the animal, which will guide them safely to the convent to which it belongs, where they will be hospitably entertained. Two, named Jupiter and Barry, are celebrated in the convent history for saving the lives of many lost travellers.

The Terrier (*Canis familiaris Terrarius*) is a variety of the Dog remarkable for the eagerness and courage with which it goes to earth, and attacks all those quadrupeds which come under the gamekeeper's denomination of vermin, from the fox to the rat. It will encounter even the badger with the utmost bravery, though it often receives severe wounds in the contest, which, however, it bears with unshrinking fortitude. As it is very expert in forcing foxes and other game out of their coverts, and is particularly hostile to the fox, it is generally an attendant on every pack of hounds. A cross of the terrier with the bulldog for the purpose of badger-baiting, &c, was at one time much in vogue. Of this breed was the celebrated Dog Billy famous for the destruction of rats. He was often turned into a room with 100 of those animals, and he frequently killed every one of them in less than seven miuntes. There are several varieties of Terriers.

The Shepherd's Dog, a variety which was most probably one of the first that civilised and settled man called in aid to preserve his flocks from beasts and birds of prey and the depredations of roving human tribes, is remarkable for the capacity of its cranium and its great sagacity. It perhaps excels all other breeds in intelligence, thoughtfulness, and promptitude. These Dogs are invaluable to the drovers who bring flocks to market from distant parts of the country. Mr. Jesse in his "Gleanings," gives the following instance of the memory and sagacity of this breed. "A shepherd employed to bring up some mountain-sheep from Westmoreland, took with him a young Sheep-Dog, who had never made the journey before, and, from his assistant being ignorant of the ground, the man experienced great difficulty in having the flock stopped at the various roads and lanes. Next year this shepherd, accompanied by the same Dog, brought up another flock. On being questioned how he had got on, he said much better than the year before, as his Dog *now knew the road,* and had kept the sheep from going up any of the lanes or turnings which had given him so much trouble in his former journey. The distance was not less than four hundred miles." The following instance of the sagacity of the shepherd's Dog was communicated to Mr. Jesse by Mr. Hogg, the poet known as the Ettrick Shepherd:—"During the time in which lambs are weaned, the Ettrick Shepherd had seven hundred of them under his care. As is sometimes the case, especially at that time, they broke away in the middle of the night, and scampered off in three different parties across the hills, in spite of all the shepherd and his assistant could do to keep them together. 'Sirrah,' cried the shepherd, in great affliction (addressing his Dog), 'Sirrah, my man, they're a' awa.' The night was so dark that he did not see the Dog, but the faithful animal had heard his master's words, and without more ado he silently set off in quest of the flock. Meanwhile, the shepherd and his companion spent the night in scouring the hills for miles round, but could see nothing of the flock or the Dog. On their way home in the morning, they discovered a body of lambs at the bottom of a deep ravine called the Flesh Cleuch, and the Dog standing in front of them, looking all around for some relief, but still standing true to his charge. Not one lamb of the whole flock was wanting."

The Poodle is a most sagacious Dog, and, above all other varieties, capable of being taught to perform tricks. It may be taught to jump over chairs, walk on its hind legs, find the right card when the pack is spread out before it, and go through such very curious performances as to almost convince us that the Dog possesses reason as well as instinct. Mr. Jesse gives the following anecdote of one of this peculiarly clever breed: "A gentleman who had occasion, when in Paris, to pass one of the bridges across the Seine, had his boots, which had been previously well polished, dirtied by a Poodle Dog rubbing against them. He, in consequence, went to a man who was stationed on the bridge and had them cleaned. The same circumstance occurring more than once, his curiosity was excited, and he watched the Dog. He saw him roll himself in the mud of the river, and then watch for a person with well-polished boots, against which he contrived to rub himself. Finding that the shoe-black was the owner of the Dog, he taxed him with the artifice, and, after a little hesitation, he confessed he had taught the Dog the trick in order to procure customers. Struck with the Dog's sagacity, the gentleman purchased him at a high price, and brought him to London. He kept him tied up some time, and then released him. The Dog remained with him a day or two, and then made his escape. A fortnight later he was found with his

THE POODLE.

former master, pursuing his old trade on the bridge at Paris."

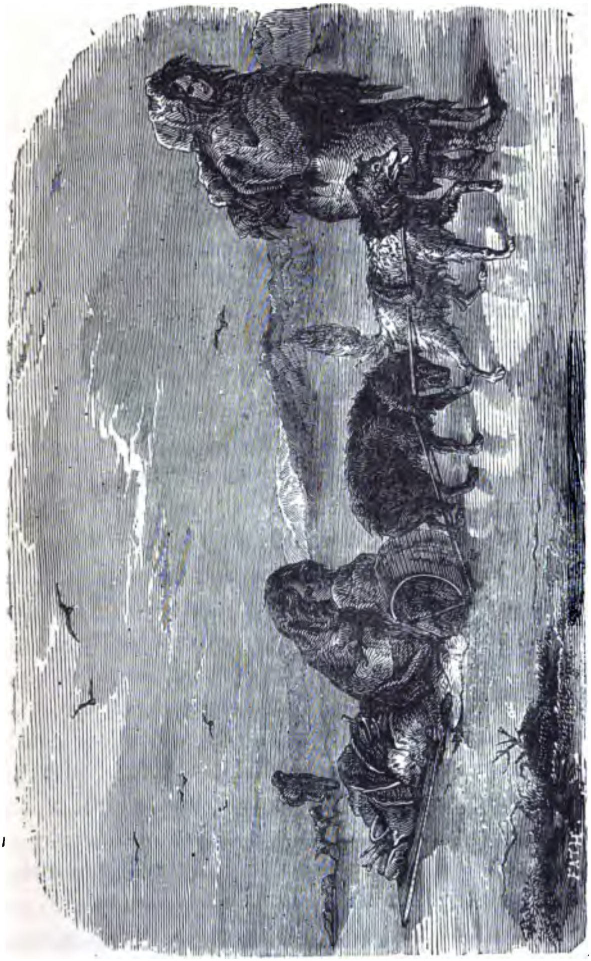
The Dalmatian, Spotted, or Coach Dog, is a handsome well-formed Dog, having its white coat marked with small, round black or reddish-brown spots. It is fond of horses, and accustomed to live with them in the stables, and attend on the carriages of the rich. There is also a similar but smaller Danish breed.

The Esquimaux Dog (*Canis Borealis*) is characterised by a firm and muscular figure, thick furry hair, and bushy tail curled gracefully over the back, and is about the size of the mastiff. Its voice, at least, in its native climate, is not a bark, but a long melancholy howl; when, however, it is brought over to England, and associates with other Dogs, it soon learns to bark.

Captain Parry in his "Journal of a Second Voyage for the Discovery of a North-west Passage," gives the following interesting description of the mode of travelling with these Dogs:—"When drawing a sledge, the Dogs have a simple harness (*annoo*) of deer or seal skin, going round the neck by one bight, and another for each of the forelegs, with a single thong leading over the back, and attached to the sledge as a trace. Though they appear at first sight to be huddled together without regard to regularity, there is in fact considerable attention paid to their arrangement, particularly in the selection of a Dog of peculiar spirit and sagacity, who is allowed by a longer trace to precede the rest as a leader, and to whom, in turning to the right or left, the driver usually addresses himself. This choice is made without regard to age or sex, and the rest of the Dogs take precedency according to their training or sagacity, the least effective being put nearest the sledge. The leader is usually from eighteen to twenty feet from the fore part of the sledge, and the hindmost Dog about half that distance, so that when ten or twelve are running together, several are nearly abreast of each other. The driver sits quite low, on the fore part of the sledge, with his feet overhanging the snow on one side, and having in his hand a whip, of which the handle, made either of wood, bone, or whalebone, is eighteen inches,

THE ESQUIMAUX DOG.

and the lash more than as many feet in length; the part of the thong next the handle is plaited a little way down to stiffen it and give it a spring, on which much of its use depends; and that which composes the lash is chewed by the women, to make it flexible in frosty weather. The men acquire from their youth considerable expertness in the use of this whip, the lash of which is left to trail along the ground by the side of the sledge, and with which they can inflict a very severe blow on any Dog at pleasure. Though the Dogs are kept in training entirely by the fear of the whip, and, indeed, without it, would soon have their own way, its immediate effect is always detrimental to the draught of the sledge, for not only does the individual that is struck draw back and slacken his trace, but generally turns upon his next neighbour; and this passing on to the next, occasions a general divergency, accompanied by the usual yelping and showing of the teeth. The Dogs then come together again by degrees, and the draught of the sledge is accelerated; but even at the best of times, by this rude mode of draught, the traces of one third of the Dogs form an angle of thirty or forty degrees on each side of the direction in which the sledge is advancing. Another great inconvenience attending the Esquimaux method of putting the Dogs to, besides that of not employing their strength to the best advantage, is the constant entanglement of the traces, by the Dogs repeatedly doubling under from side to side to avoid the whip, so that after running a few miles the traces always require to be taken off and cleaned. In directing the sledge, the whip acts no very essential



ESQUIMAUX DOGS IN HARNESS.

part, the driver for this purpose using certain words, as the carters do with us, to make the Dogs turn more to the right or left. To these a good leader attends with admirable precision, especially if his own name be repeated at the same time; looking behind over his shoulder with great earnestness, as if listening to the directions of the driver. On a beaten track, or even where a single foot or sledge mark is occasionally discernible, there is not the slightest trouble in guiding the Dogs; for even in the darkest night, and in the heaviest snowdrift, there is little or no danger of their losing the road, the leader keeping his nose near the ground, and directing the rest with wonderful sagacity. Where, however, there is no beaten track, the best driver among them makes a very circuitous course, as all the Esquimaux roads plainly show; these generally occupying an extent of six miles, when with a horse and sledge the journey would scarcely have amounted to five. On rough ground, as among hummocks of ice, the sledge would be frequently overturned or altogether stopped, if the driver did not repeatedly get off, and, by lifting or drawing it to one side, steer clear of those accidents. At all times, indeed, except on a smooth and well-made road, he is pretty constantly employed thus with his feet, which, together with his never-ceasing vociferations and frequent use of the whip, renders the driving of one of the vehicles by no means a pleasant or easy task. When the driver wishes to stop the sledge, he calls out, '*wo woa,*' exactly as our carters do; but the attention paid to this command depends altogether on his ability to enforce it: if the weight is small, and the journey homeward, the Dogs are not to be thus delayed; the driver is therefore obliged to dig his heels into the snow to obstruct their progress, and, having thus succeeded in stopping them, he stands up with one leg before the foremost cross-piece of the sledge, till, by means of laying the whip gently over each Dog's head, he has made them all lie down; he then takes care not to quit his position, so that, should the Dogs set off, he is thrown upon the sledge, instead of being left behind by them." With "good sleighing," that is, on good roads, "six or seven Dogs will draw from eight to ten hundredweight, at the rate of seven or eight miles an hour, for several hours together." With a smaller load they will run ten miles an hour, but are almost unmanageable.

The Australian Dog, or Dingo (*Canis Dingo*), is so wolf-like in its appearance, that Bewick figured it as the "New South Wales Wolf." Its height is rather less than two feet, and the length two and a half feet. The head is much like that of a fox, the ears short and erect, with whiskers from one to two inches in length on the muzzle. The general colour is pale brown. The tail is of moderate length, somewhat bushy, but in a less degree than that of the fox; and the animal generally bears a greater affinity to the wolf than the fox. It is very savage, and laps like other Dogs, but neither barks nor growls if vexed and teazed; instead of which it erects the hairs of the body like bristles, and seems furious. It is very eager after its prey; but will not touch dressed meat.

CHAPTER IX.

THE HORSE—THE WILD HORSE—THE ASS—THE WILD ASS—THE MULE.

THE *Equidæ* form a family of animals containing not more than ten species, constituting, according to some zoologists, but one genus, *Equus,* while others arrange it into two, *Equus* and *Asinus,* the latter comprising all the species except the Horse. The Horse and the Ass have been domesticated from the earliest period. The Horse (*Equus Caballus*) has in all ages been famed for his beauty, speed, strength, and spirit,—qualities which have rendered him valuable to savage as well as civilised man. Everywhere he is recognised as the most useful of the servants of man, and he yields in intelligence to the dog alone. Many splendid descriptions of the Horse have been given by the poets of all ages, but none equals in power and sublimity the magnificent verses in the inspired book of Job, chapter xxxix, verses 19—25: "Hast thou given the Horse strength? Hast thou clothed his neck with thunder? Canst thou make him afraid as a grasshopper? The glory of his nostrils is terrible. He paweth in the valley, and rejoiceth in his strength: he goeth on to meet the armed men. He

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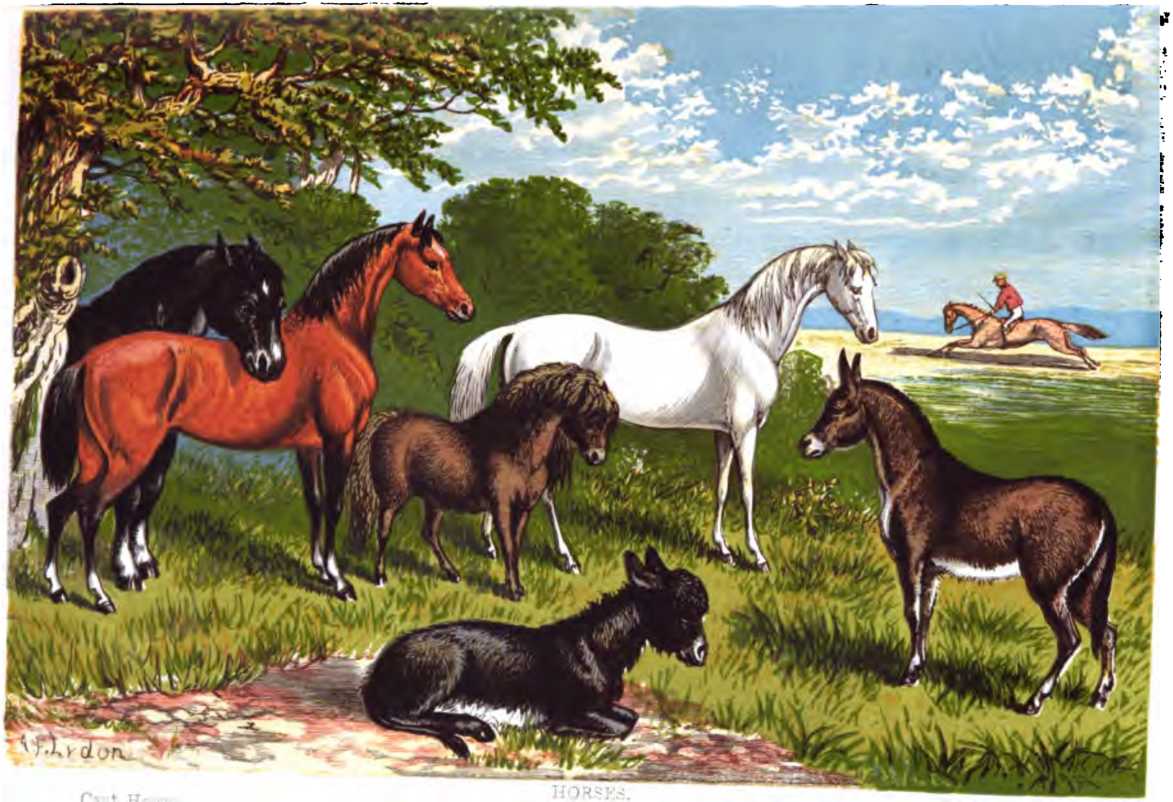


HORSES.

Cart Horse. Hunter. Shetland Pony. Ass. Arabian. Race Horse. Mule.

mocketh at fear, and is not affrighted; neither turneth he back from the sword. The quiver rattleth against him, the glittering spear and the shield. He swalloweth the ground with fierceness and rage: neither believeth he that it is the sound of the trumpet. He saith among the trumpets, Ha, ha; and he smelleth the battle afar off, the thunder of the captains, and the shouting."

It would appear that the Horse was first domesticated or reclaimed in the East, that it was brought with the hordes migrating westward from Asia, and was thus introduced into Arabia and Egypt, and that we must look to the desert north of Hindustan, and Persia as its cradle, or at least as the locality in which it first became subject to man. With the nations of Central and still more of Northern Asia, says Colonel Hamilton Smith, "The whole people are mounted, and do nearly all their domestic work in the saddle; they cross rivers by holding their Horses tails, or fastening them to rafts or boats, convey themselves and families to the opposite shores, sometimes several miles distant. Of all the races of man, they alone eat their flesh, drink the milk of mares, and know how to convert it into *curmi*, an intoxicating beverage; they marry on horseback, their councils meet on horseback, and declarations of war, treaties of peace or alliance, are dated from the stirrup of the sovereign. The nations of High Asia were inventors of the bridle, of the true saddle, of the stirrup, and probably of the horseshoe. With many of them, a Horse, a mare, and a colt were fixed nominal standards of value, such as the cow was once among the Celtæ. In a general view, equestrian habits become more and more decided as we advance towards the East. In Europe, the Poles continued to elect their Kings on horseback to our own times. At present, no nation of the west can oppose an equal force of cavalry to the Russian; in the earlier campaigns of Suwarrow the Russian could not cope with the Turkish; a century ago the Turks were inferior to the Persian Horse; and these were repeatedly overwelmed by Usbeks, Afghauns, and Toorkees, who, descending from North Eastern Tahtary, came from the Jaxartes down the valley of the Oxus, each in turn propelled by riding armies from the same quarter. Tahtar tribes repeatedly swarmed westwards from the age of Attila to the thirteenth century, when they still penetrated to the Nile and as far as Silesia; and twice within the middle ages, Tahtar hordes invaded and subdued China." Although the Horse, the Ass, and the Mule, are now spread over the face of the civilised earth, and although the Horse is found wild, or rather has reverted to a wild state, in both the New and the Old World, there is no doubt that they were originally entirely confined to the Old World, where the truly wild species of the family, the Zebra, the Quagga, &c., are still to be found in all their native freedom.

The Wild Horse abounds in immense troops in the vast plains of Great Tartary, where free and anfettered, they scour the desert each troop guided by one "mighty steed," to whom all appear to submit. It seems to be quite clear that the Wild Horses of Tartary are as much the descendants of a domesticated race as the Wild Horse of America; and those of the

HERD OF WILD HORSES CAUGHT IN A SNOWSTORM.

were mounted in a space which, I think, hardly exceeded an hour."

North America likewise contains herds of Wild Horses; they are in form stout cobs, mostly bay, though there are herds where black predominates; they have considerable speed, and are very surefooted. The herds belong exclusively to the prairie, avoiding mountains and woods. They were formerly abundant in the Floridas, and still range through the open districts to California and the plains of the Columbia. The Hon. C. A. Murray, in his "Travels in North America," thus graphically describes a *Stampedo*, or passage of Wild Horses: "About an hour after the usual time to secure the Horses for the night, an indistinct sound arose, like the muttering of distant thunder; as it approached, it became mixed with the howling of all the dogs in the encampment, and with the shouts and yells of the Indians; in coming nearer, it rose high above all these accompaniments, and resembled the lashing of a heavy surf upon a beach; on and on it rolled towards us, and partly from my own hearing, partly from the hurried words and actions of the tenants of our lodge, I gathered it must be the fierce and uncontrollable gallop of thousands of panic-stricken Horses; as this living torrent drew nigh I sprang to the front of the tent, seized my favourite riding-mare, and in addition to the hobbles which confined her, twisted the long *lariett* round her fore legs, then led her immediately in front of the fire, hoping that the excited and maddened flood of Horses would divide and pass on each side of it. As the galloping mass drew nigh, our Horses began to snort, prick up their ears, then to tremble, and when it burst upon us, they became completely ungovernable from terror; all broke loose and joined their affrighted companions, except my mare, which struggled with the fury of a wild beast, and I only retained her by using all my strength, and at last throwing her on her side. On went the maddened troop, trampling in their headlong speed, over skins, dried meat, &c., and throwing down some of the smaller tents. They were soon lost in the darkness of the night and in the wilds of the prairie, and nothing more was heard of them, save the distant yelping of the curs, who continued their ineffectual pursuit." It is remarkable that the Asiatic Wild Horses can never be properly tamed, unless taken and trained when very young, and they frequently break out into violent fits of rage in after-life, exhibiting every sign of natural wildness; while the American Wild Horses can be reduced to perfect obedience, and even rendered somewhat docile within a few weeks, and sometimes even within a few days. This difference may be caused by climate, but is, most probably, the result of the American race being descended from the domesticated Spanish stock."

Mr. Bell, who appeals to the Holy Scriptures in proof that the Horse is of Eastern origin, is of opinion, from the same authority, that the Egyptians were probably the first who broke the proud spirit of this noble animal, and reduced it to obedience and servitude. The books of Genesis and Exodus abound with passages which prove that the Horse had been long under the dominion of man at the date of the events then recorded

In the earlier ages of the world he seems to have been devoted to the purposes of war or of pleasure, while the ox was the agricultural servant. "The reduction of the Horse to a domestic state," says Buffon, "is the greatest acquisition from the animal world ever made by the art and industry of man," and it is greatly to be regretted that this noble, sagacious, intelligent, docile, and affectionate animal, so willing to work for his master, is not always treated with kindness and consideration. "In this country," says Mr. Bell, "the Horse has always been an object of the highest interest; and our ancestors were, from the earliest period, celebrated for the excellence of their breeds of this useful animal. When Cæsar landed on the shores of Kent he was received by the cavalry and war chariots belonging to the defending army. How long before this period the barbarous inhabitants of our island had known the use of this powerful constituent of the material of an army, is of course beyond the limits of conjecture; but from this time, occasional mention is made of the excellence of British Horses."

The Horse in a state of domestication varies in size from the massive and gigantic dray Horse to the diminutive Shetland pony. Its colour is also as variable as its size, ranging through white, cream-tint, gray, mottled, iron-gray, dun, bay, chesnut, black, &c. It moreover presents us with different strains, how produced originally it is not easy to say; certainly the high-blooded racer and the slight meagre Arab present strong contrasts in their contour and capabilities to the heavy Flanders Horse and the huge dray Horse rising from eighteen to twenty hands high at the withers. Between these two extremes there are numerous intermediate breeds, some adapted for the chase, some for carriages and light-wheeled vehicles, some for the traveller's saddle, and some for farmhouse labour. Ponies again, a small variety of the Horse, show differences of a like nature, some are finely formed, full of mettle and courage, and show high blood; others are clumsy and ill formed, though strong and hardy, and the intermediate gradations are numerous. It is impossible to speak decidedly as to what age the Horse would naturally attain. Many have exceeded thirty, and some even forty years of age; but, from ill usage and over exertion, the majority come to their end before they have seen nine or ten years. The age of the Horse is ascertained by an examination of its teeth, or rather its incisor or fore-teeth, which are called nippers. But so many artful and indeed barbarous tricks are played by Horse dealers to give an apparant age to a colt, and thereby enhance its value, and after maturity to give the teeth that appearence which they would have when the animal had but just attained to its prime of vigour, that even good practical men are often deceived. The Horse is naturally herbivorous; his thin muscular prehensile lips, his firm and compressed mouth, and his sharp incisors, are admirably adapted for the purposes of seizing and cropping the grass; so flexible indeed are the lips, that the Horse can pick up with ease the last few grains of oats in the manger. The crushing power of the grinders is extraordinary, the muscles of the lower jaw being of vast volume and energy; hence vegetable fibres, grass, grain, &c., are comminuted to a pulp. Nevertheless, it is doubtful whether in his natural condition the Horse would select grain, were it obtainable, in preference to grass. The grinders in time become much worn by its attrition, and in many old Horses the grain is only partly crushed, and consequently affords little nutriment. Hence, as a general rule, grain should be bruised before being put into the manger. Horseflesh is eaten by the Indians of America, as well as by the Guachos, and also by the Calmuck Tartars, and it has recently been used as food in France, not only during the siege of Paris, but previously by a society formed to encourage its use. In many parts of Asia, mare's milk forms an article of diet; and it is also converted into butter and cheese, and the Tartars make a favourite beverage by fermenting it.

Authentic anecdotes of his affection, courage, sagacity, intelligence, memory, docility, and other excellent qualities would fill a volume,

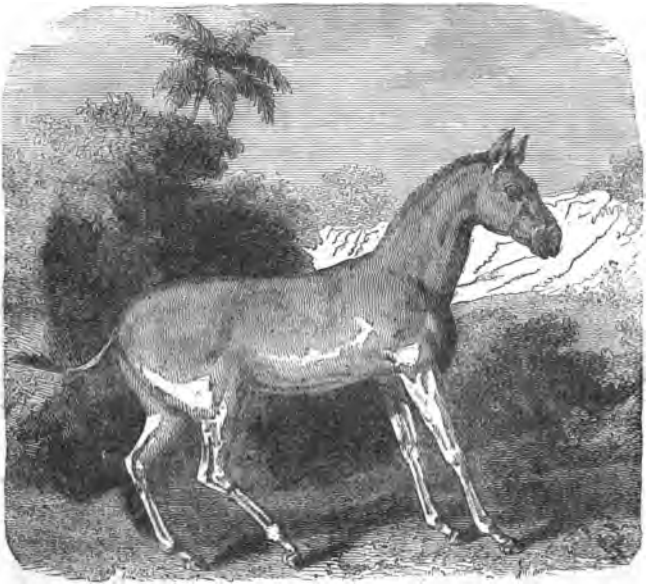
The Horse is very affectionate, and fellow-friendships are manifested to a great degree, between those that inhabit the same stable, or draw together. The coachman well knows that he gets over his stage in less time, and with a great deal more pleasure, when old yoke-fellows are pulling together than when strange Horses are paired. In some the friendship is so intense that they will neither eat nor rest when separated from each other. Of its affection for its kind, Mr. Jesse gives the following instance :—"Two Hanoverian Horses had long served together during the Peninsular war, in the

German brigade of artillery. They had assisted in drawing the same gun, and had been inseparable companions in many battles. One of them was at last killed; and after the engagement the survivor was picqueted as usual, and his food brought to him. He refused, however, to eat; and was constantly turning round his head to look for his companion, sometimes neighing as if to call him. All the care that was bestowed upon him was of no avail. He was surrounded by other Horses, but he did not notice them; and he shortly afterwards died, not having once tasted food from the time his former associate was killed. A gentleman who witnessed the circumstance assured me that nothing could be more affecting than the whole demeanour of this poor Horse." The Horse also often shows strong affection for other animals. Mr. Jesse relates the following instance:—"A Horse and a cat were great friends, and the latter generally slept in the manger. When the Horse was going to have his oats, he always took up the cat gently by the skin of her neck, and dropped her into the next stall, that she might not be in his way while he was feeding. At all other times he seemed pleased to have her near him."

The genus *Asinus* contains many species, divided between Asia and Africa, one of which the Domestic Ass (*Asinus vulgaris*), the descendant of the Onager (*Equus onager*), one of the wild species which roam the great Asiatic deserts, has been domesticated from the earliest ages, and is now spread over nearly all the world. It is very doubtful if the Domestic Ass is found in a truly wild state; the Asses which have been described as wild appear rather to be domestic animals which have escaped, or Mules between the Domestic Ass and the allied wild species; for when caught they, after a short time, submit themselves to man, which is not the case with the wild kinds. "From time immemorial," says Mr. Martin, "the Ass in eastern climes has been the slave of man; but in the northern latitudes of Europe its introduction may be considered as comparatively recent, being unknown there in the time of Aristotle, and now, strong, patient, and hardy as it is in our unfriendly clime, still it is not the animal it is found to be in the southern states of Europe, and more especially in the East. Here it is dull and slow; there it is large, handsome, and spirited, and in common use for the saddle. In our 'Christian land,' it leads a life of scanty fare and illtreatment, ended by a premature death; and yet for the purpose of a poor industrious man we know of no beast of burden so truly serviceable, nor one with more substantial claims upon his gratitude."

The Ass varies very greatly in size and appearance according to the climate, being large and smooth-haired in the warmer climates, and small and shaggy in the colder countries. The Dziggitai (*Asinus hemionus*) or Wild Ass of the Scriptures is characterised by a simple black dorsal line without the shoulder stripe or crossbar that distinguishes the Onager, and is of a pale bay or cream colour. It inhabits the deserts of Tartary, Persia, Bucharia, Tibet, South Siberia, and India, and is wild and untameable in the extreme. In the proportions of its limbs it combines the lightness and elegance of the stag with the power of great muscular exertion, and literally runs with the rapidity of lightning, carrying its head erect, and snuffing up the wind at its pleasure.

The Ass and Horse breed together. The offspring of the male Ass and a Mare is termed a Mule, and has generally the form in a great degree of the dam, and the head, ears, and tail of the sire. The offspring of a female Ass and a Horse is called a Hinney, but is altogether inferior to the Mule.



THE WILD ASS.

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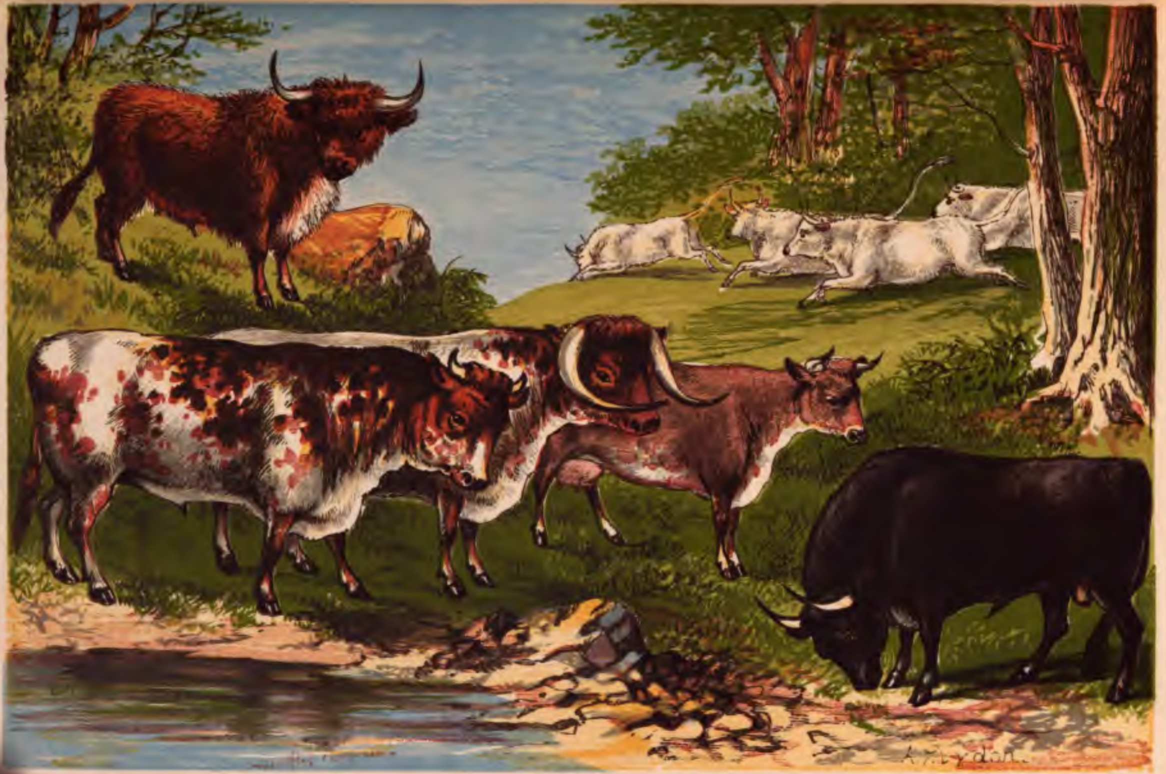


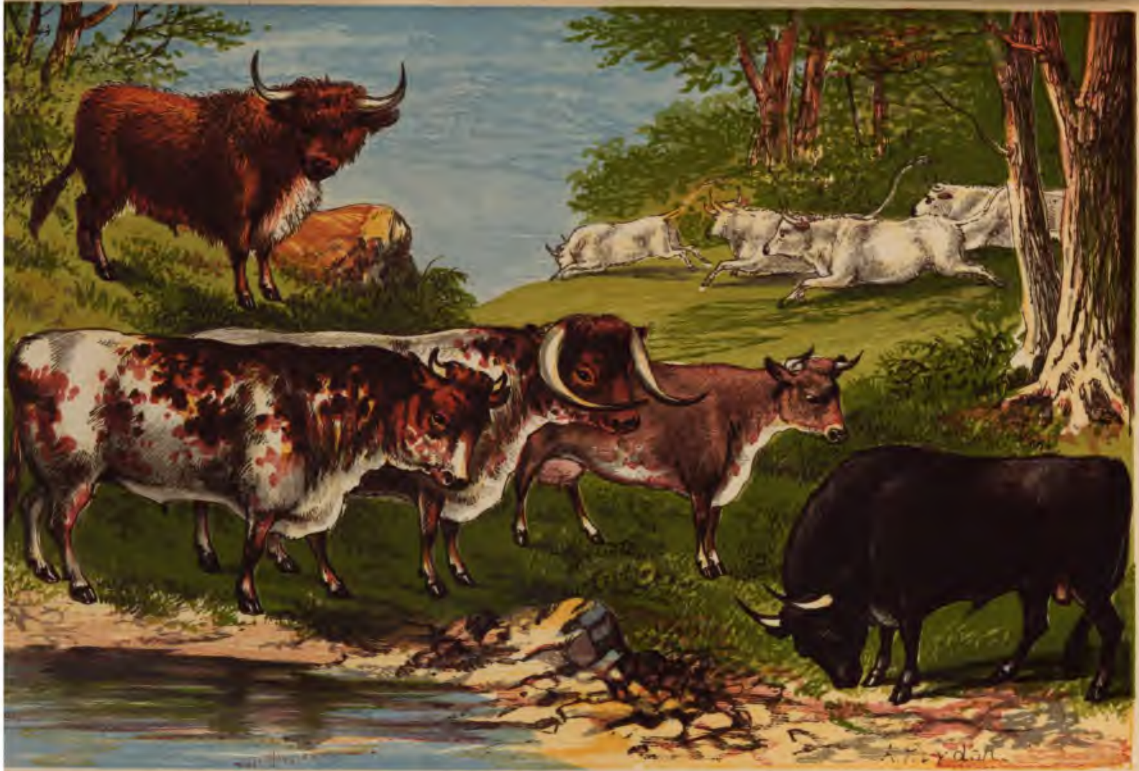
OXEN.

Highland.
English Short Horn.
English Long Horn.
Alderney.
Chillingham Wild Cattle.
Spanish Bull.

CHAPTER X.

THE OX.

THE OX (*Bos taurus*) is now only known as a domestic animal, spread far and wide throughout every country of the globe, the bondslave of man, and one of the first triumphs of his power in modifying the habits and instincts of the brute creation. Of all his acquisitions over which he has "dominion," it is the most valuable; and it constitutes the wealth of nations. "If the qualities of the dog," says Mr. Bell "are of a higher and more intellectual character, and bring it into closer communication with man as a social being, and if the horse, as a beast of burden and of draught, serve more to his immediate personal assistance, the Ox surpasses these, and all others, in the devotion of its powers while living, and the appropriation of every part of the body when dead, to the wants, the comforts, and the luxuries of his owner." The varieties of the European domesticated races are almost the only animals which are used, few of the other species having yet been found capable of being domesticated to any extent, or easily reared in confinement. Although referred to as a domestic animal, almost from the dawn of man's career upon the globe, by the sacred Scriptures, impenetrable



OXEN.

Highland.
English Short Horn.
English Long Horn.
Alderney.
Chillingham Wild Cattle.
Spanish Bull.

darkness hangs over the primæval history of the Ox. The revolutions of years, a thousand circumstances—temperature, soil, food and climate—have all combined to effect a series of modifications in the Ox. Every country possesses its peculiar races, and these races, by their intermixture, are perpetually producing others, so that it is impossible to say to what extent these changes may arrive, and how far the original type has become already modified. Certain it is that we are acquainted with no animal in a state of original independence to which we can refer as the primitive type of the Ox. Wherever the breeds may have originally arisen, or from whatever primitive stock they may have sprung they have spread far and wide, over the European continent, they have reached North and South Africa, and now exist in innumerable herds. In the latter countries, they form a most important source of wealth, and are tended with the utmost care, their skins regularly dressed, and their horns twisted and variously ornamented. In North America, they are more numerous now than the wild buffalo; and in South America, where the Ox was first introduced by the Spaniards, herds wander at pleasure over the rich savannahs and plains teeming with a luxuriant vegetation, fleet, and wild. The Mexican hunts them on horseback, and singling out an individual, throws his *lasso* over the horns or around the limbs with unerring precision; the end of this lasso or noose of leather is fastened to the girths of the horse, which is trained to resist the sudden strain of the wild and furious bull rushing in his headlong course. One lasso is scarcely fixed before another rider, galloping by, throws his also, another, and perhaps another succeeds; the plunging, struggling beast thus securely enveloped is dragged along to the slaughter, or slain on the spot.

The genus *Bos,* which embraces the various races of Oxen distributed over the face of the globe, is characterised by the horns, which are permanent, being hollow and smooth except at the base where they are ringed, simple rounded, tapering to a point, curved outwards at the base and upwards at the point, so as to form together a crescent, including the bony ridge of the forehead by which they are connected, which bony ridge within has cavities communicating with the frontal sinuses; by the muzzle being large, naked and moist, with one exception; by the skin of the neck forming a hanging dewlap; and by the general robustness and massive construction of the body. Both sexes have horns; and the expression of the countenance of some species, particularly in the males, and often even in the domestic bull, is malignant and threatening; while that of the domestic Cow and Ox is often peculiarly gentle.

In primitive times Oxen were used to thrash corn by treading it out with their feet in simply passing over the sheaves: "Thou shalt not muzzle the Ox when he treadeth out the corn." (Deut. xxv, 4.) And Bishop Heber noticed that in India this ancient mode of treading out the corn with Oxen is still in general adoption; they are driven over the sheaves, round and round in a circle, and are not muzzled, but being kept constantly moving they can only snatch a mouthful of straw now and then during the performance of their labour. Afrerwards rollers or wheels of wood were used which were drawn over the sheaves by the Oxen; and various other modes and instruments employed for the same purpose are described by ancient writers. In the earliest ages, as also in modern times, the Ox not only laboured in the cart, but also drew the plough, a service to which the horse was not then devoted, but for which it is now, at least in England, most commonly used; though in some counties, as Devonshire, &c., the Ox still labours at this important work and in a great measure supersedes the horse. Mr. Youatt observes, that "where the ground is not too heavy the Devonshire Oxen are unrivalled at the plough; they have a quickness of action which no other breed can equal, and which few horses exceed. They have also a degree of docility and goodness of temper, and also stoutness and honesty of work, to which many teams of horses cannot pretend." In many parts of continental Europe the Ox is still almost exclusively employed in the cultivation of the soil, and the Ox-team may be often seen toiling at the plough with patient and submissive perseverance.

Our domestic cattle are classified as Long-horns, Short-horns, and Middle-horns. The Long-horns were formerly coarse and heavy beasts, but had, however, thick mellow hides and gave rich though not abundant milk. This breed was greatly improved by Mr. Robert Bakewell, of Dishley, who founded the New Leicester or Dishley stock which was remarkable for its smallness of bone, disposition to fatten, and fine-grained and well-marbled flesh; but from some cause—neglect, breeding-in-and-in, or over-attention, the stock has deteriorated, and lost favour. The great improver of the Short-horns or Durham breed was Mr. Collings, and this favourite breed now combines the most valuable milking properties with a tendency to fatten rapidly and early, size, a magnificent figure, and the most excellent quality of beef. The Middle-horned or Devon stock varies in stature—according to climate and pasturage; the horns are of moderate size, fine, well-turned, and sharp-pointed; the limbs clean; the figure compact; and the expression animated; the Oxen readily fatten and the cows yield rich milk. The Alderney is a smaller variety of the Norman breed short-horned, with slender limbs, and are much prized for the richness of their milk, of which they yield a fair quantity. The Kyloe or Highland cattle in their native pastures, where they are not housed, are extremely rough and shaggy and wild-looking, but improve greatly in their personal appearance when fattening in the Lowlands. They are generally black, horned, very healthy, easily fed, and afford rich and excellent beef. Immense droves pass anually to the south, where they are fed for the London markets.

The White Urus (*Bos Scoticus*) is the name of a breed of cattle which lives in a wild state in a few private parks in Scotland and the north of England, the most remarkable of which are the parks of Chillingham Castle, Northumberland, and that of Hamilton Palace, in Lanarkshire. They are generally believed to be the remains of the ancient breed of white cattle which were found on the island when the Romans first visited it, and which they represent as then running wild in the woods. The stock at some of the parks has been worn out, or destroyed by some means—neglect or disease. That at Chillingham was once reduced to a single cow in calf, the produce of which fortunately proved to be a bull. In Chillingham Park there are between 1500 and 1800 acres of enclosed land, combining besides good pasture, a range of wild and rocky moor, interspersed with abundant wood and cover for their shelter, and approaching as near as any enclosure can to the wild nature of their original habitation. From sixty to eighty head are kept up here, a certain proportion being regularly destroyed, to prevent the increase of the breed beyond their means of support. Mr. Culley gives the following interesting account of this breed, in Bewick's work:—"Their colour is invariably of a creamy white; muzzle black; the whole of the inside of the ear, and about one third of the outside from the tips downwards, red; horns white with black tips, very fine and bent upwards; some of the bulls have a thin upright mane about an inch and a half or two inches long. The weight of the Oxen is from thirty-five to forty-five stone, and the Cow, from twenty-five to thirty-five stone, the four quarters (fourteen pounds to the stone). The beef is finely marbled and of excellent flavour. From the nature of their pasture, and the frequent agitations they are put into by the curiosity of strangers, it is scarcely to be expected they should be very fat; yet the six-year-old Oxen are generally very good beef, whence it may be fairly supposed that in proper situations they would feed well. At the first appearance of any person they set off in full gallop, and at the distance of about 200 yards make a wheel round and come boldly up again, tossing their heads in a menacing manner; on a sudden they make a full stop at the distance of forty or fifty yards, looking wildly at the object of their surprise; but upon the least motion being made they all again turn round and fly off with equal speed, but not to the same distance, forming a shorter circle, and again returning with a bolder and more threatening aspect than before, they approach much nearer, probably within thirty yards, when they again make another stand, and then fly off: this they do several times, shortening their distance and advancing nearer and nearer, till they come within such a short distance that most people think it proper to leave them, not choosing to provoke them further. The mode of killing them was perhaps the only remains of the grandeur of ancient hunting. On notice being given that a wild bull would be killed on a certain day, the inhabitants of the neighbourhood came, mounted and armed with guns, &c., sometimes to the amount of a 100 horse and 400 or 500 foot, who stood upon walls or got into trees, while the horsemen rode off the bull from the rest of the herd, until he stood at bay, when a marksman dismounted and shot. At some of these huntings twenty or thirty shots have been fired before he was subdued. On such occasions the victim grew desperately furious from the smarting of his wounds, and the shouts of savage joy that were echoing on every side. But from the number of accidents that happened this dangerous mode has not been practised of late years; the park-keeper alone, generally shooting with a rifle-gun, at one shot. When the cows calve they hide their calves for a week or ten days in some sequestered situation, and go and suckle them two or three times a day. If any person come near the calves, they clap their heads close to the ground, and lie like a hare in form, to hide themselves: this is a proof of their native wildness, and is corroborated by the following circumstance, that happened to Mr. Bailey of Chillingham, who found a hidden calf two days old, very lean, and very weak. On stroking its head, it got up, pawed two or three times like an old bull, bellowed very loud, stepped back a few steps, and butted at his legs with all its force; it then began to paw again, bellowed, stepped back, and butted as before; but knowing its intention and stepping aside, it missed him, fell, and was so very weak that it could not rise, though it made several efforts; but it had done enough. The whole herd were alarmed, and coming to its rescue, obliged him to retire, for the dams allow no person to touch their calves without attacking them with impetuous ferocity. When any one happens to be wounded, or is grown weak and feeble through age or sickness, the rest of the herd set on it and gore it to death."

The various breeds of European cattle are nearly alike, differing only in such points as are produced by different modes of feeding. But the various East Indian breeds present characteristics so different to the European that they appear to belong to a different species, instead of being, as we know, the result of domestication. The Indian Ox, or Brahmin Bull (*Bos Indicus*) has a more elongated form of skull, with a decidedly concave line of profile, an arched neck, a hump of fatty substance rising from the withers, an arched back sinking and rounded off on the crupper, an enormous dewlap dangling down in folds, long pendulous ears, a mild and sleepy eye, and long and taper limbs. Of this race numerous breeds "varying in size," says Mr. Mitchell, "from that of a large mastiff dog to that of a full-grown buffalo, are spread more or less extensively over the whole of southern Asia, the islands

THE INDIAN OX, OR BRAHMIN BULL.

of the Indian Archipelago, and the eastern coast of Africa from Abyssinia to the Cape of Good Hope. In all these countries the Zebu (for so is the humped variety termed), supplies the place of the Ox, both as a beast of burden and as an article of food and domestic economy. In some parts of India it executes the duties of a horse also, being either saddled and ridden, or harnessed in a carriage, and performing in this manner journeys of considerable length with tolerable celerity. Some of the older writers speak of fifty or sixty miles a day as its usual rate of travelling; but the more moderate computation of recent authors does not exceed from twenty to thirty. Its beef is considered by no means despicable, though far from equalling that of the European Ox. The hump, which is chiefly composed of fat, is reckoned the most delicate part. Its most common hue is light ashy gray, passing into cream colour or milk-white; but it is not unfrequently marked with various shades of red or brown, and occasionally it becomes perfectly black. The hump is sometimes elevated in a remarkable degree, and usually retains its upright position, but sometimes it becomes half pendulous, and hangs partly over towards one side. Instances are cited in which it had attained the weight of fifty pounds. A distinct breed is spoken of as common in Surat, with a second hump."

For descriptions of the BUFFALO, BISON, MUSK OX, and YAK, see the First Volume of this Series.

For the management of cows, see "The Dairyman: a Practical Guide to Cow Keeping." By JOHN DARTON. Price 1s. Groombridge and Sons, 5, Paternoster Row, London.

CHAPTER XI.

THE SHEEP—THE GOAT—THE CASHMERE GOAT—THE WILD BOAR—THE HOG—THE BABIROUSSA—THE WHITE-LIPPED PECCARY—THE AMERICAN TAPIR.

THE genus *Ovis,* which comprehends the Sheep and its immediate allies, is distinguished from that of *Capra,* which includes the Goats, by several slight differences; that if taken singly are of little value, but when taken in the aggregate form sufficient ground, in the opinion of some naturalists, on which to base the respective genera, while others consider the two as forming only one genus. The Sheep is distinguished chiefly by the general want of a beard, a convex forehead, by his spiral horn not projecting backwards, and more especially by the preponderance of wool over hair in proportion to the care bestowed upon him. Sheep are timid, defenceless, and of a more dependent character than the Goats. The covering of the Sheep is composed of two substances, the one long and appearing outwardly, the other short and thick, and occupying the part next the skin. The lower covering has received the name of wool, and the getting rid of the long portion, or the hairs, is termed the "improvement of the fleece." The essential character of wool as distinguished from hair consists in its surface being covered with im-

Wild Boar.
Common Sow.

Cashmere Goat.

[illegible] and Description

CHAPTER X.

[illegible] GOAT—[illegible] WITH [illegible] THE [illegible] WHIT[illegible] [illegible] R.

THE genus Ovis which comprehends the Sheep [illegible] immediate allies, is distinguished from [illegible] Capra, which includes the Goats, by [illegible] that taken singly are [illegible] taken in the aggregate [illegible] of some natural [illegible] respective genera, while oth[illegible] [illegible] one genus. [illegible] chiefly by the general want a[illegible] rch[illegible], by his spiral horns projecting [illegible] and [illegible] by preponderance of wool over hair in proportion [illegible] care bestowed upon him. Sheep are [illegible] legs, and of a more dependent character than Goats. The covering of the Sheep is [illegible] the one long and appearing [illegible] and thick, and occupying the part next [illegible] lower covering has received the name [illegible] getting rid of the long portion [illegible] the "improvement of the [illegible] character of wool as distinguished [illegible] its surface being covered with

Wild Boar. Common Goat. Southdown. Ram.

Common Sow. Cashmere Goat.

bricated scales, upon the presence of which and its waviness depends its property of *felting*, that is, of being worked up into a mass of firmness and tenacity by the interlocking of the scales of such fibres as are twisted together with the scales in opposite directions. Pressure brings the hairs or woolly fibres against each other, and multiplies points of contact. Agitation gives to each hair a progressive motion towards the root—(we all know how an ear of barley will work its way up a person's sleeve)—but the roots are disposed in different directions—in every direction; and thus the scales of the multitudinous and intertwined fibres diversely directed will become locked together. The mixture of hair in the wool can often be detected by close examination with the naked eye, but most readily by the assistance of a microscope. In hotter countries the fleece loses its fur or wool and becomes hair. The filaments of wool taken from a healthy sheep present a beautifully polished and even glittering appearance; that of the neglected or ill-fed animal exhibits a paler hue. It is only by diligent cultivation that the quantity of hair has been generally diminished, and that of wool increased in our best breeds.

The varieties of the Common Sheep (*Ovis aries*) are exceedingly numerous; widely indeed do they differ from each other in external form and clothing, nor do we know which of them to refer to as the type or as nearest the original stock from which all have descended; or the circumstances under which it was originally reclaimed from its natural independence. In no country in the world has sheep-breeding been carried to so great an extent, or the imported breeds so much improved in value, as in Great Britain, by an assiduous attention and care to procure the best varieties whence to continue the flock. The improvement has fortunately been attended with very large profits to the individuals who have from time to time engaged in it, and thus it is that we have such variety of constitution, adapted either to the deep and rich soil, and luxuriant pasture and balmy climate of the south, the sharper soils and rich grasses of the upland countries, or the highland alpine herbage of the north, cold in its climate and searching in its storms and snows, where the life of the shepherd is no sinecure, but where the summer bite, though short, is nourishing and sweet, and where the heathy mixture imparts a flavour coveted even by the luxúrious of the metropolis. The Leicester or Dishley breed is now the most common, and most extensively reared, over all the rich and low-lying pasture land of England. It is distinguished from the other long-woolled breeds by having fine lively eyes, clean heads without horns, straight broad flat backs, round or barrel-shaped bodies, fine small bones, thin pelts or skins, and a disposition to make fat at an early age, with a superiority in the fineness of the grain and flavour of the mutton. This new Leicester breed of Mr. Bakewell has spread to every part of the United Kingdom.. There are few other varieties of long-woolled Sheep which do not owe much of their excellence to the Leicesters, and even some of the short-woolled flocks have been greatly benefited by it; indeed, the chief value of the new Leicester breed consists in the improvement which it has effected in almost every variety with which it has been crossed. It has often been attempted to introduce the Leicesters into the neighbourhood of the South Downs, but it was found that they could not be driven two or three miles twice every day from the fold to the pasture and from the pasture to the fold. The South Downs are short-woolled and have a patience of occasional short keep, and an endurance of hard stocking, equal to any breed; an early maturity, scarcely inferior to the Leicesters; and produce flesh of fine grain and good flavour. These Sheep occupy the whole of the upper and under hill-grounds of Sussex. They are adapted to almost any situation in the midland part of England.

Among the European races, by far the most important, as far as regards the texture of the wool, is the Merino, though, if we look to a combination of advantages, some of the British breeds will surpass it in value; while by crossing the hardier nature has been transferred, and the produce of a wool of equal quality, but nearly double in quantity, has been yielded by some of them. The Merino breed, it is generally supposed, were originally obtained from England, and were either of the Ryland or Cotswold stock; or were produced by a cross of the native Spanish breed with a flock sent from England. For ages the superiority of the wool of the Merino flocks of Spain was acknowledged all over Europe, without any country or individuals suggesting the idea of improving their native breeds by crossing them with the Spanish race. It was in the cold and bleak climate of Sweden that the attempt was first made to naturalise the Sheep of Spain, and to breed from them for the general improvement of the Swedish stock. By degrees the Merino Sheep found its way to almost every part of the European continent, and by careful management its fleece rapidly increased in fineness and usefulness. It has been introduced successfully into Great Britain, Australia, and other countries. The colonisation of South Africa has produced a great improvement in the breed of Sheep, which is now almost altogether Merino in great purity.

In Russia there is a breed distinguished by a long trailing tail; and in India and Guinea a race which are characterised by an elongated tail, long pendant ears, a marked convexity of forehead, long and slender limbs, short and smooth hair, and an absence of horns. In Persia, Tartary, China and South Africa, the tail forms an enormous double globe of fat, and is esteemed a great delicacy; while in Syria and Barbary it is of considerable length, and consists of one immense mass of fat. It is often necessary to support these tails by artificial means.

Sheep are not so utterly destitute of intelligence as is usually imagined, and many facts on record justify the conclusion. Their habits have seldom been sedulously attended to. That the Sheep is capable of strong attachment both to individuals of its own species, to other animals, and to man, is abundantly proved. In ancient times the intimacy, if we may so speak, between the shepherd and his Sheep was more close than it is at present, at least in most parts of Europe, and the necessity of the dog as an assistant was never felt. From this resulted a docility in these animals which is rarely seen in Great Britain. It was a custom to give names to the Sheep, which the animals learned (as the dog does), and to which they answered when the shepherd called them. Instead of driving them before him he walked first, and they followed attentive to his voice; at least, such was the custom in some places; hence the force of our Saviour's words, in reference to Himself as the Good Shepherd:—"The sheep hear his voice: and he calleth his own sheep by name, and leadeth them out. And when he putteth forth his own sheep, he goeth before them, and the sheep

THE FAT-TAILED SHEEP.

follow him: for they know his voice." (St. John, x, 3, 4). The ancient practice of teaching Sheep to know their name and obey when called is not extinct. In some parts of France the shepherds select certain Sheep from the flock; they give them particular names, and teach them to come when they are called. In order to accustom them to this, they make the Sheep follow them by offering them a piece of bread. When the shepherd wishes to lead his flock through a defile, or to make them change the direction in which they are proceeding, he calls one of these selected Sheep. Those that are nearest to him immediately follow, and the others are not far behind; and so, by degrees, the whole flock obey the call of the shepherd, and follow him. In mountainous countries, or in wild districts, over which the flocks wander dispersed, the use of the pipe or horn has been known and practised from a very early period, the Sheep obeying the signal-notes to which they have been taught obedience.

Numerous as are the varieties of the GOAT (*Capra Hircus*) they are fewer than those of the Sheep, and also less removed from each other—facts which seem to prove either that the Goat is less susceptible of modification by the united agencies of domestication, food and climate, or that it has never been so completely domesticated and so subdued in its nature as the Sheep. In its temper it is bold, confident, inquisitive, and capricious; it acts for itself; it is not blindly led by its companions, and it knows how to resist the attacks of an adversary with vigour. It is fond of the society of man, and becomes playful and affectionate, courting his notice, and, if encouraged, engaging in mimic combat. Its climbing propensities are irrepressible—we see it mount on palings, on the eaves of houses, on ledges of any kind, where it would scarcely be thought capable of finding foot-room; in fact, its predilection for precipices and bold rocks remains unbroken by servitude. Hence its adaptation for mountain districts, in which it thrives; and its utility to the natives of such provinces of Europe, in which it takes the place of the cow and the Sheep, the milk of the females and the flesh of the young being equally acceptable. It is indeed peculiarly active, hardy, and powerful, and will live upon the scanty herbage of the highest ranges, visiting the borders even of the line of snow in quest of the vegetation which the transient summer calls forth; hence its importance on the Alps, where it is kept in large flocks. But its numbers in England compared with other countries are very limited. The demand for its milk is only occasional, and the flesh even of the kid is not in much request. The skin of the Goat is superior in its texture to that of the Sheep, and manufactured into a soft and beautiful leather. It is of Goats' skins that the best morocco leather is made, and the value of the skin of the kid, as forming a soft, pliant, and durable leather for gloves, is universally acknowledged. The Goat is more productive than the Sheep, the female usually producing two or even three kids at a birth.

Naturalists almost unanimously refer the origin of our Domestic Goat to the Wild Goat or Paseng of Persia (*Capra Ægagrus*), which inhabits the mountains of that country in herds, and the mountain ranges of other parts of Asia, and perhaps also of Eastern Europe. It is larger than our domestic Goat, and has larger horns, with sharp edges at their back.

The domestic breed of English Goats is too well known to need description. The Goats of Angora and Cappadocia are celebrated for their soft and silky hair, which forms the staple of the cloth called camlet.

The Cashmere or Thibet Goat produces a wool of exquisite delicacy, from which are manufactured those celebrated Cashmere shawls which can be purchased in Europe only at a great price, and are costly even in the country where they are wrought. The Cashmere Goat is covered with silky hair, long, fine, flat, and falling, and with an under-vest of delicate grayish wool. In height the Cashmere Goat equals the moderately-sized race of England, and is robust and active; the horns are nearly erect, spiral, and diverging at the points; the ears are large and erect, and the body is covered with long, straight, silky white hairs. The peculiar odour, so strong in our European Goats, is not to be perceived in this race, which may be regarded as of all others the most valuable. It is estimated that 16,000 looms are there in constant use, each giving employment to three men, and it is calculated that 30,000 shawls are disposed of annually. The wool is spun by women, and afterwards coloured. When the shawl is made it is carried to the Custom House and stamped, and a duty paid in proportion to its texture and value. The persons employed sit on a bench at the frame, sometimes four people at each, but if the shawl is a plain one only two. A fine shawl with a pattern all over it takes nearly a year in making; the borders are worked with wooden needles, having a separate needle for each colour. There is a headsman who superintends and distributes the pattern, and the rough part of the shawl is uppermost while it is manufactured. Besides the true Cashmere breed, from which originally the celebrated Cashmere shawls were made, there are several others which have been employed for the same purposes in different parts of India; and there is a Tartar half-breed, which has been found to survive well in a colder climate, and which has been introduced with considerable success into France. Those brought from the kingdom of Cashmere are, however, the most valued.

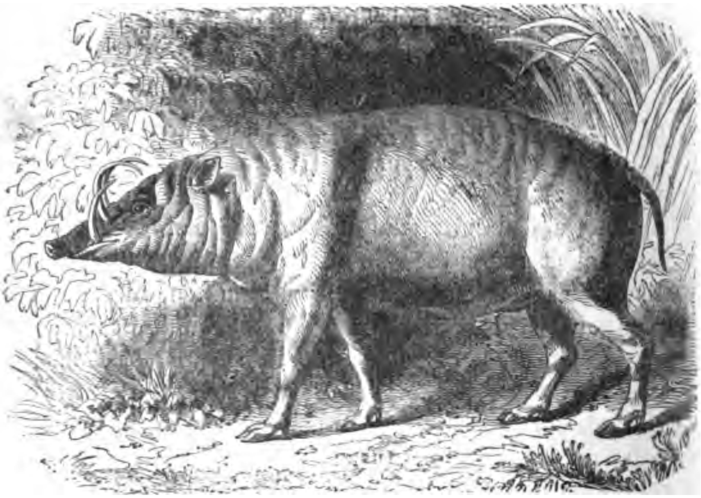
The *Suidæ* or Swine are a family of *Pachydermatous* animals, of which there are several genera and species. Most of them are natives of Africa and Asia, but one genus in confined to South America, its two living species being the only species indigenous to the American continent.

The Wild Boar (*Sus scrofa*) from which our present domestic herds of Hogs are descended, was formerly common in the dense forests of ancient Britain, and is still numerous in the extensive forests of continental Europe, Asia, and the mountains of Northern Africa. The Wild Boar has a greater length of limb, greater development of the snout, a more bony appearance, small erect ears, and is of a dark-grizzled brown or rusty black, more or less brindled. The old males are said to live solitarily, never congregating with the general herd, which consists only of females and their young, for which they fight with the utmost fury. The hunting of the Wild Boar is still eagerly followed in Germany and the wooded regions of Europe, and is also one of the sports of the East. "The chase of the Wild Boar," says Mr. Bell, "has always been considered as a sport presenting the highest interest and excitement, and it is certainly one of the most dangerous. When once at bay the Boar becomes indiscriminately furious. He turns on his persecutors, and strikes at the nearest, often ripping open the belly of a horse or dog; and the hunter himself is in no little jeopardy if he be on foot or his horse have thus been disabled."

In point of utility to man the Domestic Hog, although perfectly useless during life, is perhaps the most value able and important from the use of its flesh, which, in a fresh state, or salted as ham or bacon, is seen alike on the tables of the rich and poor. No animal is so productive; the sow bearing two litters in the year, each numbering from eight to fourteen, and sometimes more. No animal converts a given quantity of corn or other nutritious food so soon into fat, or can be made fat on so great a variety of food; while the rearing and fattening of the Hog, and the preparation of it when killed employ a vast amount of labour and capital. There are many varieties of the Domestic Hog. The British breeds receive their names most frequently from the county in which they were introduced and reared. Thus the Hampshire, Essex, Sussex, Suffolk, Cheshire, and Shropshire Pigs are well known as excellent. The Chinese breed is most commonly black, the form characterised by a fine appearance, small short head, thin ears, and short slender legs. They are remarkable for being easily fattened, and perhaps become too fat; and a cross with this breed is therefore often more valued for the table than the pure breed. Our domestic breeds have been introduced and thrive in America, Australia, and the South Sea Islands. The Hog is omnivorous, thrives on every kind of food, vegetable or animal, and is very voracious.

The Babiroussa (*Sus Babiroussa*), the only species of the genus *Babiroussa*, is rather a handsome animal, and very remarkable for the great development of the upper tusks of the male, which project from both jaws, and form a circular turn upon each side of the nose. They cut through the skin of the snout so as to appear like horns growing in an unusual situation, and do not pass out between the lips as in the Wild Boar, and consequently the tusks of the old male are not so dangerous as those of the Wild Boar during attack, owing to their curvature, but nevertheless they are formidable weapons. The lower tusks are sharp and powerful. The skin is very thinly furnished with long and hard hair. The colour of the skin is of a uniform grayish tint, changing to fawn colour on the belly. These animals abound in the Molucca Islands, and some others of the Indian Archipelago, chiefly towards the interior. Their food is vegetable. They seem difficult to obtain notwithstanding their numbers, and when hunted are said to take the sea freely and swim to some other neighbouring island. The Babiroussa is capable of being domesticated, and its flesh is good and palatable.

The genus *Dicotyles* or Peccaries is peculiar to Mexico and South America, where it may be regarded as taking the same place in the forests of the New World which is occupied by the Wild Hogs of the genus *Sus* in those of the older continents. Two species are known, both of which, in appearance and propensities, are closely allied to the swine. The tails are wanting or reduced to a mere tubercle, and a large glandular apparatus beneath the skin of the loins pours out from an orifice a fluid of most disgusting odour. The flesh is said to be good, but the glandular apparatus must be removed when killed or the flesh will have a bad odour and


THE BABIROUSSA.

taste, although the Indians eat it without this precaution.

The White-lipped Peccary (*Dicotyles labiatus*) is so called from the sides of the upper lip and the whole of the under lip being white. The general colour is black, slightly grizzled. It is larger than the collared species and more robust, and is often three feet and a half in length, and weighs 100 pounds. They associate in herds of hundreds, which traverse the country in quest of food unimpeded by rivers, which, however broad or rapid, they cross with the utmost ease, or by dense thickets, through which they force their passage. The Collared Peccary is so called from its having a line of white which passes from the forepart of the neck obliquely upwards, and meets over the shoulders. It is

THE WHITE-LIPPED PECCARY.

not so gregarious as the other species, going only in pairs or small families. Both species breed only once a year, and produce but two at a birth. They feed on vegetables, but, like the Hog, do not refuse animal food, and wage a war of destruction upon serpents and lizards, which they devour with avidity.

The AMERICAN TAPIR (*Tapir Americanus*) closely resembles the Hog, but is much larger, with a heavy massive body and thick muscular neck. This animal is the largest quadruped in South America, and is extensively distributed all over that continent, extending over almost every part of it east of the Andes, but is probably most abundant within the tropics, where it inhabits the deep forests, leading a solitary life, and seldom stirring from its retreat during the day, which it passes in a state of tranquil slumber. It chiefly feeds on water-melons, gourds, young shoots of brushwood, &c., but is as omnivorous as the Hog. It is chiefly characterised by its snout forming a short but flexible proboscis, capable of considerable extension, and extremely useful as an organ of prehension in seeking and taking in its food, though not also of suction like that of the elephant. The Tapir is from five to six feet in length, powerfully formed, and covered with a scanty close-lying hair, forming a bristly mane upon the neck. The colour is a deep brown. The sides of the lower lip, a band occupying the middle of the chin beneath, the upper edges of the ears, and a naked line at the junction of the hoofs, are all pure white. The young are of a lighter colour, and spotted or striped for the first year at least. The skin is so thick and tough that Sonnini says he frequently fired at one which was crossing a river with her young without causing her to turn aside from her direction, although he could see the impressions made by the balls on her hide. The Tapir is almost as fond of water as the Hippopotamus. The female, we believe, produces only one at a birth. It is easily domesticated, and becomes as quiet and familiar as the Hog. There is another species, the Indian Tapir, which is a native of Sumatra and the Malay Peninsula. It is larger, without a mane, of a black and white colour, and has a larger and more proboscis-like snout.

THE AMERICAN TAPIR.

CHAPTER XII.

THE WILD CAT—THE DOMESTIC CAT—THE CIVET—THE ICHNEUMON—THE POLECAT—THE FERRET—THE WEASEL—THE BEECH MARTEN—THE PINE MARTEN—THE SABLE—THE STOAT, OR ERMINE—THE SKUNK—THE RACOON.

THE Cat belongs to the *Felinæ* and is akin to them in its habits and manner of life, particularly resembling the tiger in its form. We have no knowledge when it became domesticated; nor are we certain of the original stock or country from which it sprung, some naturalists considering that the Wild Cat is a distinct species, while others believe it to be the original stock of the domestic breeds.

The Wild Cat (*Felis catus*) is found in all the wooded countries of Europe, especially in Germany, Russia, and Hungary, and in the north of Asia. It is now rarely found in the south of England, and even in Cumberland and Westmoreland its numbers are very much reduced; but in the north of Scotland, and in Ireland, it is still abundant. It is larger, more robust and powerful than the Domestic Cat, has longer and shaggier fur, and its tail is of equal size throughout its length, or rather larger towards the extremity. The fur is of a pale yellowish colour mixed with gray. The

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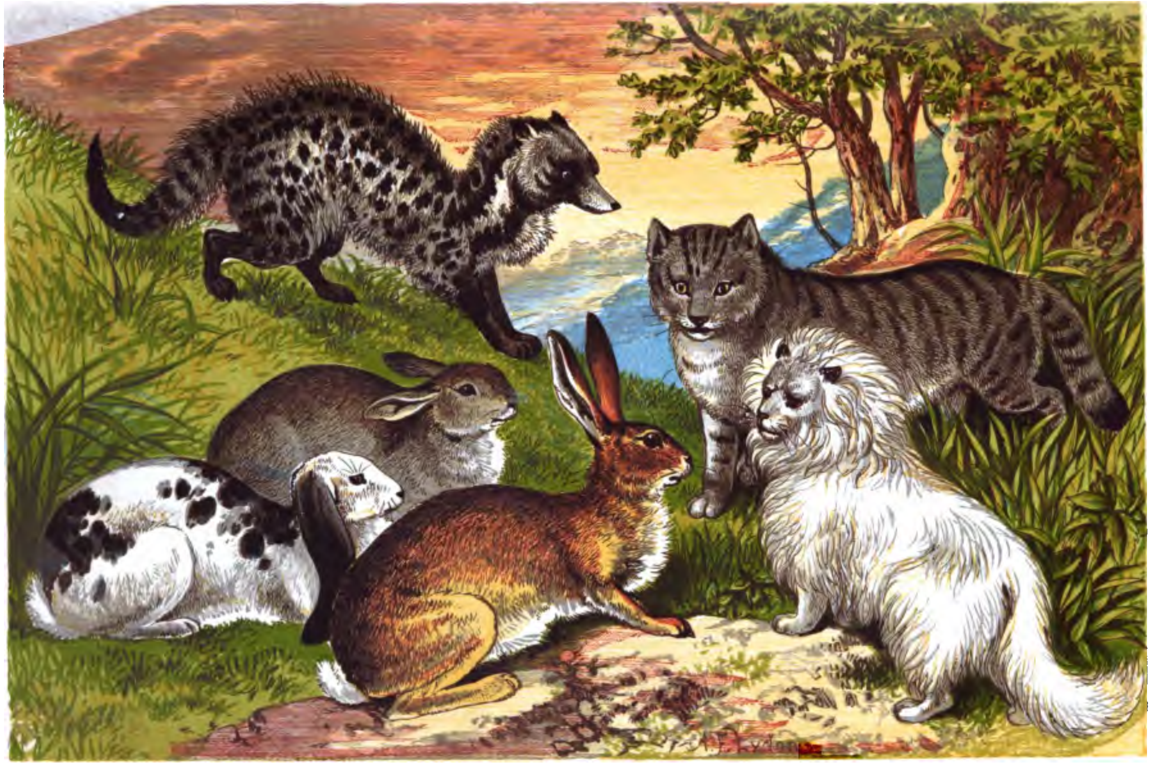
[illegible] Wild Cat [illegible] is found in all the wooded [illegible] of Europe, especially in Germany, Russia, [illegible] and in the north of Asia. It is now [illegible] the south of England, and even in [illegible] and Westmoreland its numbers are very [illegible]ed; but in the north of Scotland and in [illegible] It is larger, more robust [illegible] the Domestic Cat, has [illegible] and [illegible] tail is of equal size throughout its [illegible] larger towards the extremity. The [illegible] yellowish colour mixed with gray. The

Plate 7.



Civet. Hare. British Wild Cat.

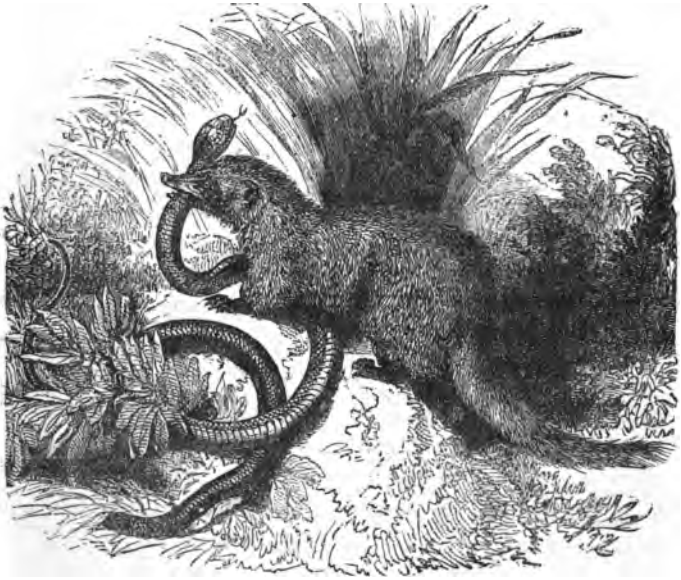
Lop-eared Rabbit. Common Rabbit. Angora Cat.

average length of the head and body is nearly two feet, and of the tail nearly one foot, the female being rather smaller. The animal is largest in cold latitudes, and its fur richer. It has a fierce aspect and is most destructive, preying upon all kinds of game, rabbits, poultry, &c.

There are several varieties of the DOMESTIC CAT (*Felis domestica*). The Tortoise-shell Cat is one of the prettiest varieties of those which have the fur of moderate length, and without any particular silvery gloss. The colours are very pure black, white, and reddish orange; and in this country, at least, males thus marked are said to be rare, though they are quite common in Egypt and the south of Europe. The Angora Cat has silvery hair of fine silken texture, generally longest on the neck, but also long on the tail. Some are yellowish and others olive, approaching to the colour of the lion; but they are all delicate creatures, and of gentle dispositions. The Persian Cat is a variety with the hair very much produced, and very silky, perhaps more so than the cat of Angora. It is, however, differently coloured, being of a fine uniform gray on the upper part, with the texture of the fur as soft as silk, and the lustre glossy; the colour fades off on the lower parts of the sides, and passes into white, or nearly so, on the belly. This is one of the most beautiful varieties, and is said to be exceedingly gentle in its manners. The Chinese Cat has the fur beautifully glossed, but it is very different from either of these, and is variegated with black and yellow, and, unlike the most of the race, has the ears pendulous. The Chartreux or Manx cats are of a bluish colour, and without tails.

The Civet (*Viverra civetta*) resembles the Cats in its predatory, sanguinary, and nocturnal habits, and in its general form and appearance. It is nearly two feet and a half long, exclusive of the tail which is about one foot. Its fur is long, gray, and handsomely but irregularly striped and spotted with black, and its bushy tail is ringed and tipped with black. It is a native of Northern Africa, where many are kept for the purpose of obtaining the unctuous musky perfume from which it derives its name. This substance is secreted by a glandular apparatus near the tail, and is procured by scraping the inside of the pouch with an iron spatula, twice a week, about a dram being procured each time. The female yields less. The Civet is easily domesticated, but irritable, and not to be trusted.

The Egyptian Ichneumon (*Herpestes Pharaonis*) is a native of Northern Africa, and celebrated for destroying serpents and other reptiles, which it attacks not only for food, but also for the very sake of slaughter; not that it ventures to attack the larger kinds of serpents, or crocodiles of even moderate size, but it does even better by destroying their eggs by thousands, the recently young, and all the smaller kinds. It also preys upon rats and mice, poultry and other birds; and much resembles a polecat in its manners. In size it exceeds the domesticated cat, being about eight inches in height, and its body long in proportion to its stature. Its general colour is silvery gray, and its long tail is terminated by a tuft of black; its eyes are red, small, and sparkling; its voice soft and murmuring; and it often sits up like a squirrel in feeding. During the inundation of the Nile, it lives in gardens and near to the villages; but in the dry season dwells in the fields and near the banks of the river. It is easily domesticated, docile, and affectionate, and is commonly kept tame in houses like a cat for the purpose of destroying reptiles, rats, and other vermin. It was one of the sacred animals of the ancient Egyptians.

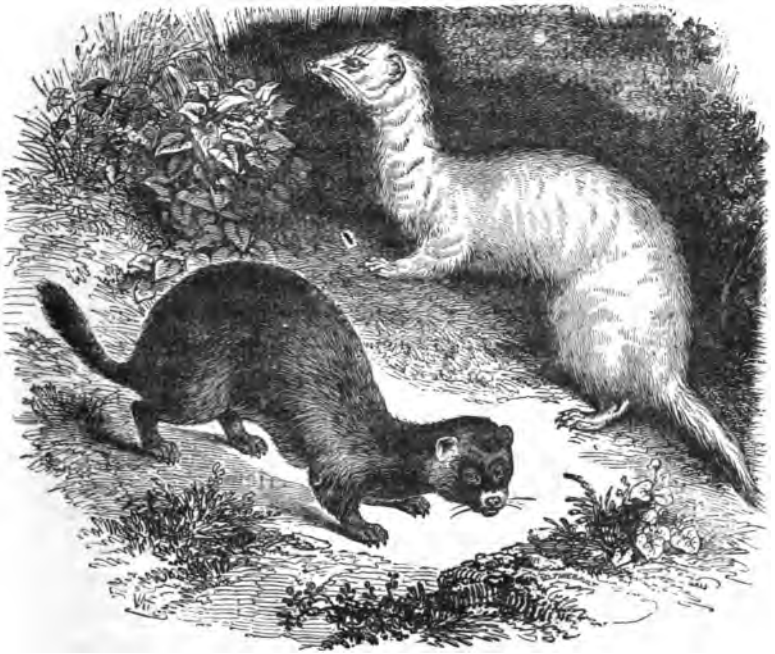


THE GRAY ICHNEUMON.

The Gray Ichneumon of India or Mongouste, is somewhat smaller, very beautiful, and equally gentle as the Egyptian. This species is renowned for its victorious conflicts with the most dangerous serpents, and for causing the discovery of that antidote against their poison, known by the name of *Ophiorhiza Mungos*, which it was found to use when bitten in its combats.

The Polecat, Ferret, Weasel, Marten, and Stoat are animals of slender form and small size, but excessively blood-thirsty. They are very destructive to game and poultry, both attacking the live animals and devouring their eggs. They all diffuse a disagreeable odour. The POLECAT, Fitch, or Fitchet, *Putorius communis*, is about sixteen or eighteen inches long, exclusive of the tail which is from four to six. The fur is of two kinds, one short and silky, of a pale yellow, which forms an under-coat; and the other long and coarser, of a dark chocolate brown, which—except in the under parts where the hairs are thin—is the prevailing colour; the mixture of the two kinds of fur produces a very agreeable effect, varied according to their proportions. This fur called Fitch is much esteemed. The Polecat is generally distributed throughout Europe, and is common in the temperate parts, but scarcer in Siberia. It is the species specially disliked by farmers, from the havoc it makes in the poultry-yard, where it slaughters poultry, pigeons, and rabbits, apparently for the blood alone, as, unless its prey is scarce, it seldom carries away its victims; and in rabbit warrens and game preserves it is most destructive, not only to the young and old but also to the eggs.

The FERRET (*Putorius furo*) was probably brought originally from Northern Africa, into Spain and thence has spread over Europe and is kept in a half domestic state for the extirpation of rats and the catching of wild rabbits in warrens. It is about fourteen inches long, exclusive of the tail which is five. It is of a yellowish colour, the long fur being partly white, and the short almost entirely yellow; its eyes are pink. It is still more blood-thirsty than the Weasels, and although capable of being tamed to a certain degree, it seldom, if ever, becomes attached, and is a dangerous inmate, unless properly secured, and has been known to cruelly lacerate an unguarded infant. It cannot bear cold and



THE POLECAT. THE FERRET.

should be kept warm. It is said to produce from six to nine young at a birth, and to have two litters a year.

The Weasel (*Putorius vulgaris*) is well known and common in great Britain. The male is about eight inches in length, exclusive of the tail, which is about two inches; the female is much smaller. The general colour is a light reddish brown, and the under parts of a pure white. Its nest is formed of dry leaves and herbage, and is generally made in some crevice in a bank or old wall, the hollow of a tree, &c. The female has two and even three litters during the spring and summer, bringing forth four or five at a birth. Small as it is the Weasel will attack dogs, and even men when its nest is invaded. It climbs trees and walls, and pursues its prey both by the scent and the sight with great perseverance. It is most amusing to see one of these flexible, agile little creatures tracing up the scent when it is at fault. They will quarter the ground like a dog till they hit it off, and to lose no helps from their eye, will occasionally sit up, raising themselves on their hindquarters to gain a more extended view around them. Their perseverance will tire down animals larger and stronger than themselves; nor will water stop them when their game takes to it for safety. In they plunge and seldom quit their object till the fatal bite is inflicted. The Weasel does great service to the farmer by clearing barns, corn-ricks, and stables, of rats and mice; but is a bad neighbour to hares and the rabbit warren, and is a great destroyer of newly hatched game birds and fowls, young ducks, and the smaller birds, although it does not one-third the damage of the Stoats, or prey upon birds or animals of such large growths, as the latter.

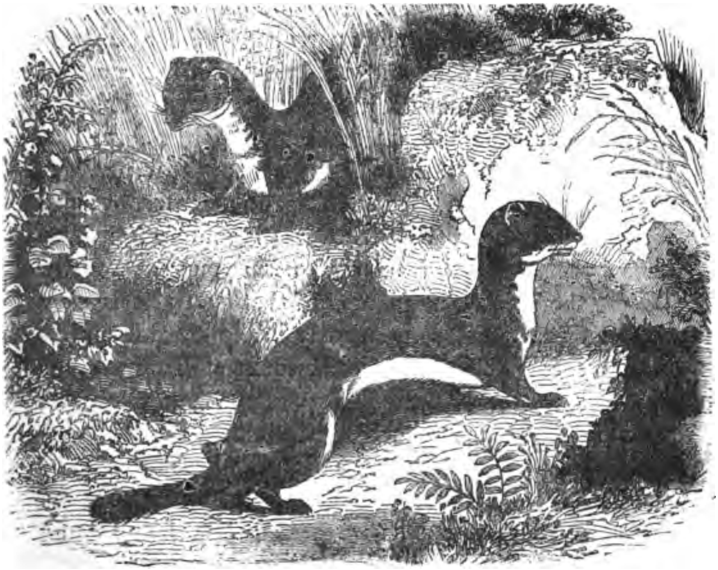
The **Beech or Stone Marten** (*Mustella Fagorum*) is about eighteen inches long, exclusive of the tail which is about nine inches, or rather more. The fur is deep and full, especially during the winter, and is exquisitely soft and beautiful. They are very active and graceful, swim well, and climb trees with the address of a squirrel. They breed in the hollows of trees and the crevices of rocks, forming their nests of leaves and dried herbage;

THE BEECH MARTEN. THE WEASEL.

and generally produce about three. Though often found in woods they are said to prefer stony and rocky localities. The fur is highly esteemed, but is not so valuable as that of the Pine Marten (*Mustella Abietum*) commonly called Sable. The general colour of this fur, which consists as is usual, of two sorts of hair, is a deep chesnut, except on the throat and margin of the ears, where the chesnut colour gives place abruptly to a fine yellow. In summer the tints become lighter and the fur shorter. Some naturalists consider the two Martens as distinct species, while others believe them to be varieties of one species. The Beech or Stone Marten is distinguished by a white throat, and the Pine Marten by a yellow throat. The latter is more recluse in its habits and frequents deep forests. They are found in our island but are more common in the North of Europe and in North America. Pallas and others have supposed that the true Sable of North-eastern Europe and Northern Asia, is a distinct species from the Pine Marten, and not a mere variety with the fur rendered deeper and fuller for the climate.

The Stoat or Ermine (*Putorius ermineus*) is one third larger than the common Weasel, the head and body exceeding nine inches in length, and the tail being rather more than four inches. In summer it is of a pale reddish-brown above, and of a dirty white beneath, with the tip of the tail black. The tail is longer and more bushy than that of the Weasel. In winter the fur becomes white, with a tinge of pale yellow, the black tip of the tail remaining unchanged; and in the high northern regions the fur becomes entirely of a pure white, except the tip of the tail which is always black. The

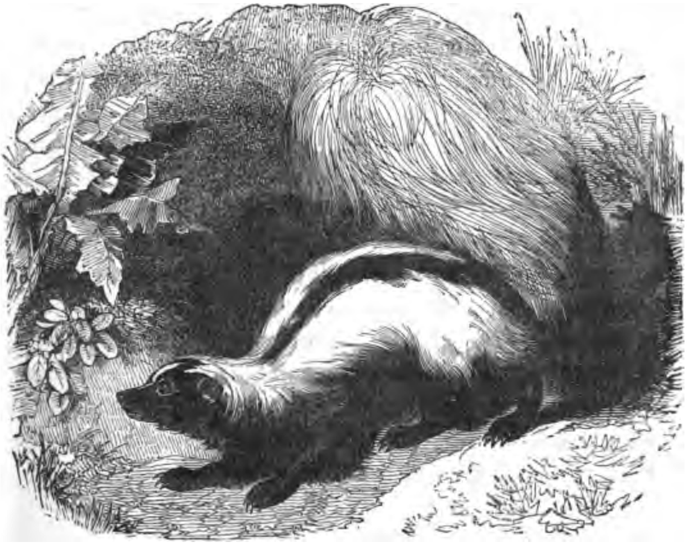
Stoat is spread over Europe generally, but is most common in the north. The finest skins, that is, those with the largest and thickest fur, and of the purest and brightest colour are obtained in Russia, Norway, Siberia and Lapland. In England the Stoat seldom assumes so complete a purity of white as in Norway or Siberia, but some exceedingly beautiful specimens have been brought from Ireland.



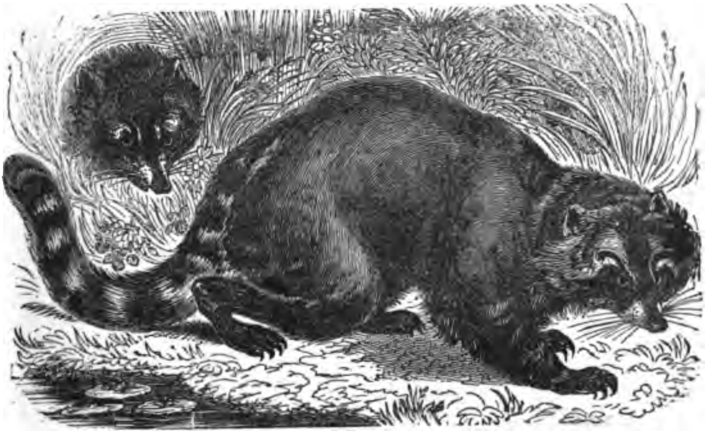
ERMINES IN SUMMER CLOTHING.

The SKUNKS (*Mephistis Americana*), are the Mephitic Polecats of America, of which there are many species. The Skunk is low on its legs, with a broad fleshy body, wide forehead, small eyes, long slender nose, and short round ears; the hair on the body is long, and that on the tail very long. The general colour is black, with two white marks, subject to some variation, passing from the back of the head down the whole length of the back, and a white line passing down the forehead. It is about eighteen inches long exclusive of the tail, which is twelve. It is found in most parts of Northern America and inhabits the rocky and woody parts of the country, but is still more frequent in woody districts. It keeps in its hole during the winter, seldom going abroad at that season, and then only for a short distance. It preys principally on mice and frogs in summer, but also feeds on insects and wild fruit. It is said to breed but once a year, and has from six to ten young at a birth. Unlike the Weasels and others of that family it is slow in its motions, and consequently easily overtaken, but though formidable neither on account of its teeth nor its claws, the Skunk possesses one of the most efficacious weapons of defence in the power of emitting a fetid discharge which is described as absolutely intolerable.

The Racoon or 'Coon, in clipped language (*Procyon lotor*), is exclusively a native of America, being found from the borders of the Red River, N. lat. 45°, down to Paraguay. It is two feet long, exclusive of the tail, which is about ten inches. The body is fat and round, and the nose pointed. The fur is soft and valuable, and composed of two kinds, one forming a short woolly undercoat, the other long and silky, ringed with black and white, producing a general gray colour; the face is lighter, with a black band round the eyes; the tail



THE HUDSON'S BAY SKUNK.



THE RACOON.

is bushy, and ringed with black and gray alternately. Its habits are nocturnal, and it preys on crabs and shell-fish, young birds and eggs, not neglecting worms, insects, roots, and the succulent parts of the sugar cane. It climbs trees with great facility, and is fond of water, from which its name *lotor* or *washer* is derived. It sits erect on its haunches while taking its food, which, before eating, it usually dips into water. It is easily domesticated. "Its dexterity," says Mr. Martin, "in opening oysters we have personally witnessed. The animal which we saw exhibit this feat first broke the hinge with its teeth, by which means the shells were loosened; it then forced them apart with its fore-paws, dexterously hooking out the contents, which it seemed to relish exceedingly."

CHAPTER XIII.

THE HARE—THE RABBIT—THE COMMON SQUIRREL—THE BADGER—THE COMMON HEDGEHOG—BATS.

The Hare (*Lepidus timidus*), and the Rabbit (*Lepus cuniculus*), notwithstanding their similarity are very distinct in their characteristics, never associating together, or producing a mixed race. Upwards of thirty species of both animals are known, widely distributed, but half of the number belong to North America. They form a family of rodents or gnawing animals. The Hare is extremely timid and vigilant, with most acute sight and smell, and is fleeter than any animal of its size; and it needs all these advantages to enable it to escape from its numerous enemies, of which the worst is man.

The Hare cannot be domesticated and is with difficulty made familiar even when taken young, and, we believe, has never been known to breed in confinement. The poet Cowper kept three Hares for many years, and has given a very interesting account of their habits. The Rabbit is much more adapted for domestication, and has been reclaimed from its original wildness, exhibiting that inconstancy of colour and those varieties which are the usual results of an artificial mode of life. The "Fancy" Rabbit, has been cultivated with great atten-

THE BADGER.

THE COMMON SQUIRREL.

tion and brought to perfection, but we have no satisfactory account of the origin of the lop-eared fancy breed. The fertility of the Rabbit is wonderful; it will begin to breed at the age of six months, and produce several litters in a year, generally from five to seven or eight at a time. The young are blind at their birth, and nearly naked. The Wild Rabbit is common, and is also preserved in warrens.

There are several beautiful species of Squirrels spread over America, Africa, and India, but the COMMON SQUIRREL (*Sciurus vulgaris*), found throughout Europe in the larger woods and forests, often in great abundance, and not uncommon in Great Britain, is one of the most beautiful of its genus. None are found in Australia. The Squirrels are generally characterised by their elegant shape, fine full eyes, deep, soft fur, and long bushy tail, and are remarkable for their grace, liveliness, and agility, the freedom and rapidity of their motions, and the elegant manner in which they often curve the beautiful tail over the body. The fur, which is red in summer, in cold countries becomes gray in winter, and slightly changes even in England. Vast numbers are killed for their beautiful fur, as many as 615,000 having been sold in the year 1836, at Irkutsk, in Siberia. The Squirrel feeds upon acorns, nuts, beech-mast, pine-tree buds, and green bark, and diligently collects large quantities of food during the autumn, which it stores up in the hollows of trees for its winter supply. Mr. Bell has observed that it carefully removes the whole of the brown skin from a nut before it eats the kernel. In feeding it usually sits upon its haunches, holding the food between the rudimentary thumbs of both paws. It lives in pairs, and builds a substantial nest of interwoven sticks and twigs at the foot of a branch on some tall tree, preferring the fir. The nest is sound, and covered in with twigs and leaves so as to be waterproof, and lined with moss, leaves, and wool, with one small opening for entrance.

THE HEDGEHOG.

The BADGER (*Meles vulgaris*), which is the only species of the Plantigrade family, or those that walk on the entire sole of the foot, that is now found in Great Britain, is a very robust and strong animal, of which the body is proportionately large and full, with a long and pointed head of moderate size. It is about two feet three inches long, exclusive of the tail which is upwards of seven. The fur is full, coarse, and deep; its general colour above is brownish gray, but lighter on the sides and tail; the under parts and legs and feet are black; the head is white with a black stripe extending from the shoulder over the ear and eye almost to the muzzle. Its habits are nocturnal and recluse, and its food in a great measure vegetable, but it also devours insects, reptiles, birds, eggs, and small animals. The female brings forth from three to five young in the spring, which do not come abroad for six or seven weeks. The skins are good and used by the Highlanders for pouches, and the hair is valuable for painters' brushes. The flesh is as good, and like that of the bear, and the hind-quarters make excellent hams. The young are easily tamed, become playful and familiar, and attached; but the peculiar odour of a fetid discharge from a pouch near the tail, renders them unpleasant companions. Although still found in many parts of England and Scotland, it is in most districts extremely rare, and in none plentiful. "It is a peaceful and harmless native of our woods," says Mr. Martin, "dwelling in burrows of its own digging, whence it is often dragged to gratify the brutal lovers of cruelty, who, in the desperate resistance which it makes against dogs trained for the combat, find a pitiful and cowardly recreation." Badger-baiting is, however, fast going out of date, and is now only pursued by the most debased or ignorant.

The COMMON HEDGEHOG (*Erinaceus Europæus*) is remarkable for having its body covered with sharp strong prickles instead of hairs. The skin of the back is furnished with muscles so arranged that the animal, on the slightest alarm, by bending its head and pressing its limbs upon the belly, can close itself up like a ball, the head and limbs being enclosed in the centre, and present on every part its spires to the enemy; and thus, although slow of foot and without any natural weapons of defence, it is endowed, as Mr. Bell observes, "with a safeguard more secure and effectual than the teeth and claws of the wild cat, or

BAT SUSPENDED BY ITS THUMB.

the fleetness of the hare." It frequents woods, copses, and thick hedge-rows; is nocturnal in its habits; and feeds upon insects, but also devours slugs, frogs, small snakes, eggs, and succulent roots. The female makes a nest of moss and dried leaves in a hole, and produces in summer from two to four young, which are blind at their birth. It is spread over Europe, except the colder regions of the north, and there are about five other species in Asia and Africa. Many ridiculous stories have been related of it, which have caused it to

BAT SUSPENDED BY THE LOWER EXTREMITIES.

be cruelly persecuted by the ignorant, but it is a harmless animal, and is often domesticated and kept in kitchens to destroy cockroaches, and can be fed upon soaked bread and boiled vegetables.

The Bats form a family called *Cheiroptera,* from two Greek words signifying a hand, and a wing, from a thin membranous expansion, which extending down on each side, encloses the extremities, and serves the purpose of wings. These wings are stretched over their limbs, of which the hinder as well as their fingers, are excessively lengthened and serve the office of whalebone in an umbrella. These wings are much larger in proportion to their size than those of birds, and the muscles being proportionately powerful, the flight of the Bat is strong, rapid, and capable of very sudden turns. The thumb, as it may be called, is provided with a strong hooked claw, which enables it to crawl along the ground, and to hang in curious positions. The eyes are very small, but the ears are very large, and exquisitely sensitive. The Bat is nocturnal and feeds on insects and mice. There are more than thirty genera and upwards of two hundred species, of which fifteen or sixteen are indigenous to Great Britain. They frequent barns and retired spots and quiet lanes, where in the twilight they may be seen wheeling their rapid flight, now and then accompanied by their shrill cry. Some of the foreign species are very large, the Kalong (*Pteropus Javanicus*) which is very abundant in Java, probably being the largest known. "In adult subjects," says Dr. Horsfield, "the extent of the expanded wings is full five feet, and the length of the body one foot."

BATS IN A CAVERN.

CHAPTER XIV.

THE AYE-AYE—THE SLOTH—THE GLUTTON—THE ANT-EATER—THE ARMADILLO—THE PORCUPINE—THE VIRGINIAN OPOSSUM—THE JERBOA.

THE AYE-AYE (*Cheiromys Madagascariensis*), a very rare animal, must not be confounded with the Ai or Sloth, from which it differs very strongly. Its principal character, which is a very singular one, is the middle toe or finger of the fore-foot, the last two joints of which are very long, slender, and without hair. This member is very useful in drawing out worms from holes in trees, and holding on to branches. The animal is about the size of the common hare, and its colour a musk-brown mixed with black and gray-ash.

The AI or Three-toed SLOTH (*Bradypus tridactylus*) derives its name from its plaintive cry, resembling the sound of the letters *a, i,* pronounced with a broad accent and wailing tone, which is often heard resounding through the woods, of Brazil, Guiana, and the inter-tropical regions of South America. The Sloth has been, until recently, erroneously misrepresented even by naturalists, the most rash and unfounded statements having been made, reflecting even on the wisdom of the Creator, the writers entirely overlooking the fact that the animal's apparently imperfect and grotesque structure is in strict

CHAPTER XIV.

[illegible] SLOTH.—THE GIBBON—THE ANT-
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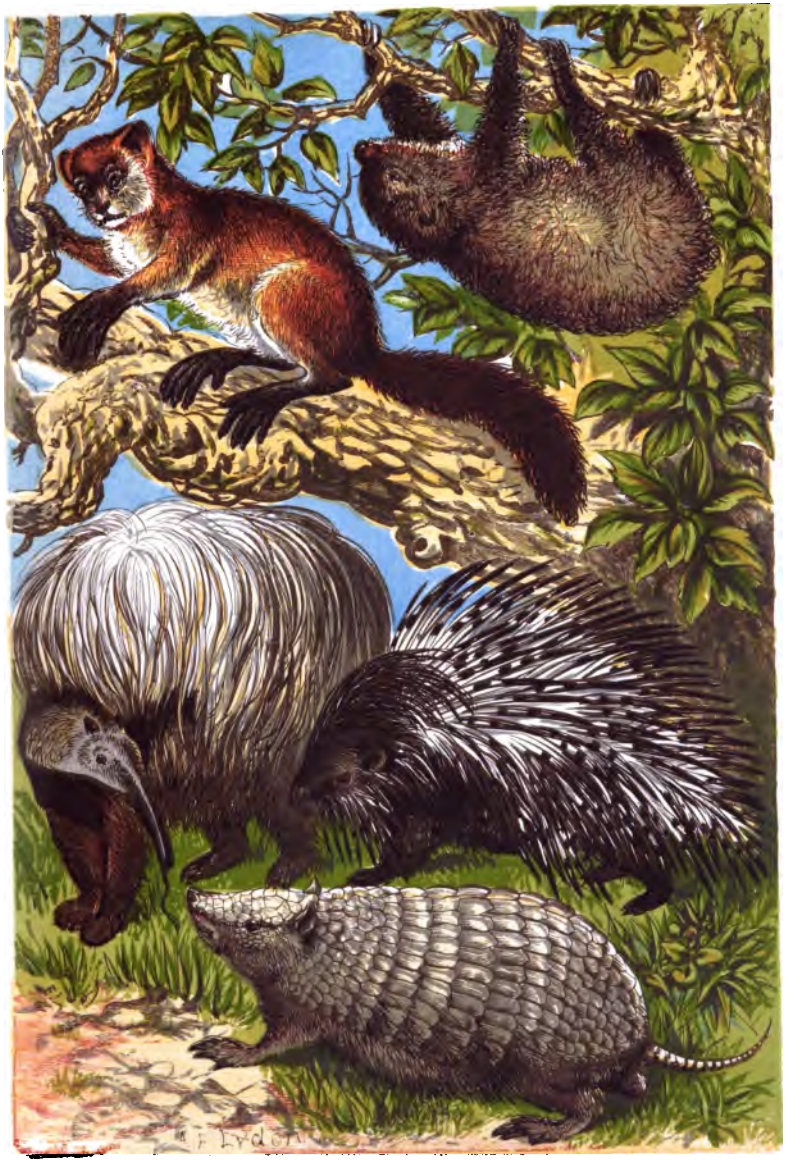
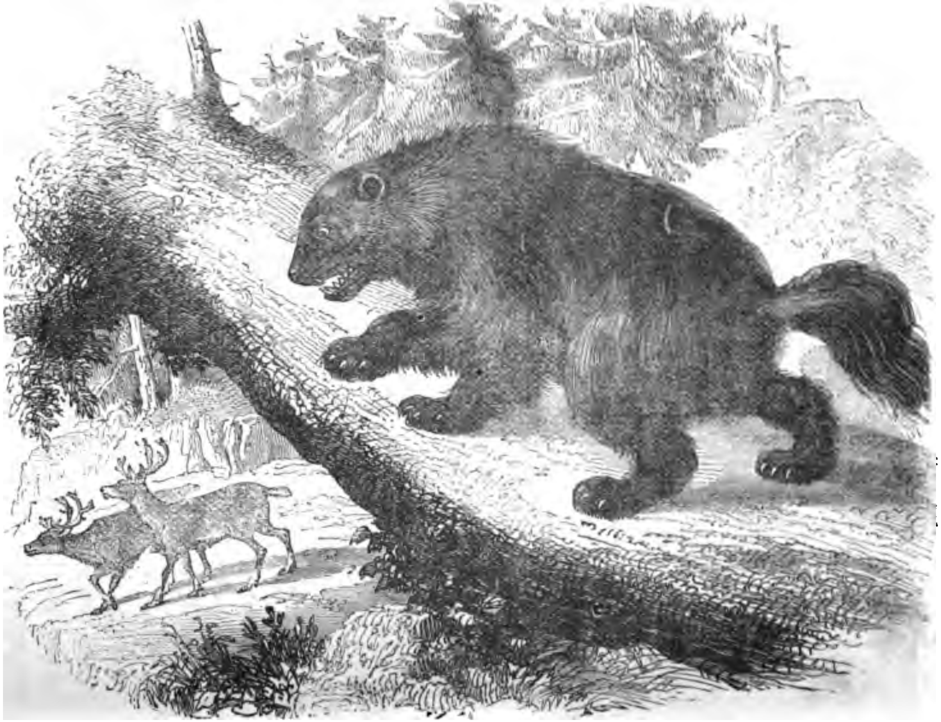
Plate 8.



Aye-Aye. Armadillo. Sloth.
Great Ant Eater. Porcupine.

accordance with, and perfectly adapted to its habits, enjoyments, and mode of life. The Sloth improperly so called from its slow movements and helplessness on the ground, where the length of its fore-limbs compels it to crawl on its elbows, is quick and active in its proper place, that is among the interwoven branches of trees. Here it does not spring or leap like the monkey or squirrel, which would be impossible from its peculiar structure, but hooking on by its great claws, it traverses along the under surfaces of the branches with its back downwards. The Sloth is about as large as a cat, The female brings forth a single young one at a birth, which clings to its parent and is carried by her till able to shift for itself. The Sloth is a timid, harmless creature, and feeds on leaves, buds, and fruits. There are several species the chief of which is the *Unau* or Two-toed Sloth.

The GLUTTON (*Gulo Arcticus*) is about the size of the badger, but its body is more slender and its activity much greater. Its fur is of a chesnut colour. The Glutton is extremely fierce, voracious, and blood-thirsty, slow in its movements but persevering and industrious, and will pursue its prey at a steady space for miles; rob the hunters' traps of their bait or booty; and "it will watch for the slow-paced beaver," says Mr. Martin, "as he comes from his house, or pursue him on land; or, lurking on the horizontal branch of a tree whose trunk is covered with moss and lichen—the favorite food of the reindeer—it will drop upon the hapless animal the moment it approaches, fix its teeth into a vein, and never quit its hold, till, exhausted with pain and loss of



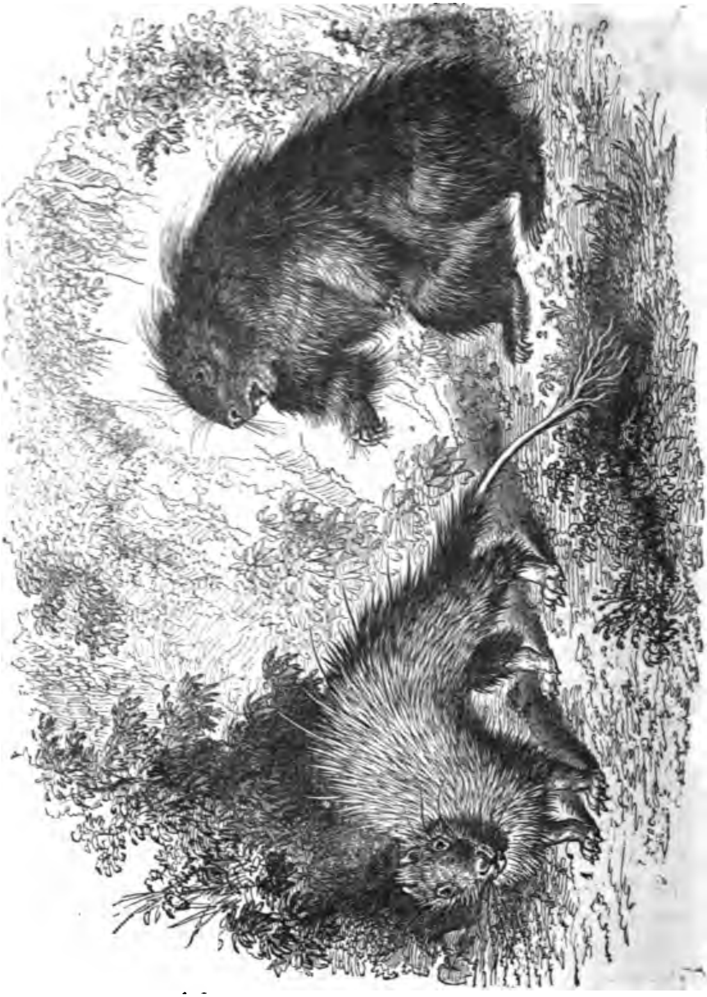
THE GLUTTON.

blood, the miserable victim sinks and expires. In this manner horses and domestic cattle are said sometimes to fall a sacrifice to its ferocity."

The GREAT ANT-EATER or ANT-BEAR (*Myrmecóphaga jubata*), the largest species of the genus, is a native of Guiana, Brazil, and Paraguay. It is four feet and a half in length, exclusive of the tail, which is three feet; and is about three feet and a quarter in height at the shoulders. It has an extremely slender elongated snout, the mouth forming a small slit at the extremity; and its most remarkable feature is a long, cylindrical tongue which ordinarily lies folded upon itself within its mouth, but is capable of extension even to the length of the whole head and muzzle. With its powerful claws it tears down the outer walls of the earthen nests of the ants, which then crowd to the surface, when it darts its tongue which is covered with a viscid secretion, among them, and swiftly draws it back into its mouth, covered with numbers of insects adhering to it.

The ARMADILLOES form another very singular genus of South American animals, remarkable for having their bodies covered above with plates and bands of horny shell or armour, varying in arrangement and number in the various species. They are nocturnal, burrow with great rapidity and feed on roots, maize, vegetables, insects, worms, frogs, eggs, and carrion of which they are very fond. The various species are chiefly from ten to sixteen inches in length exclusive of the tail, but the great Armadillo is nearly three feet long.

The PORCUPINE (*Hystrix cristata*) is remarkable for the formidable array of spines with which it is covered.



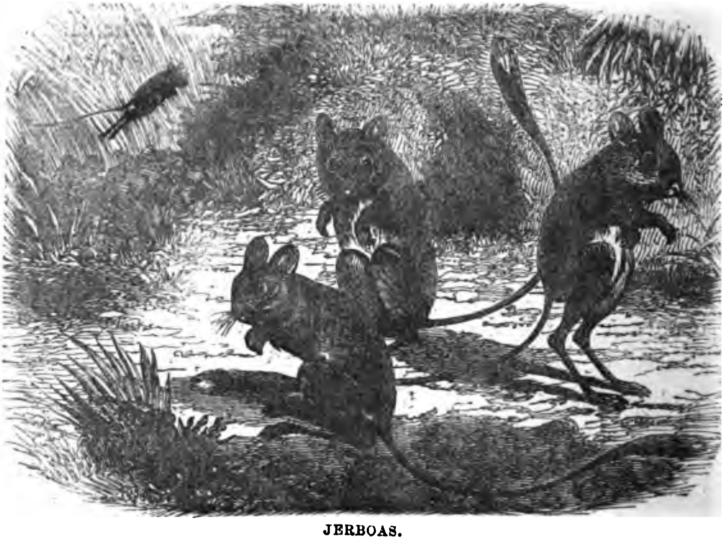
THE FASCICULATED PORCUPINE.

THE CANADA PORCUPINE.

These spines are hollow tubes, covered with a coat of enamel of great hardness, tapering gradually to a point. The spines are furrowed through their length, and marked with broad alternate rings of black and white. They usually lie nearly flat upon the body, with their points directed backwards; but when the animal, which is very irritable, is excited, they are erected, by a set of muscles beneath the skin. The story of the Porcupine shooting out its spines against an enemy is fabulous. The animal is about two feet in length, and of a grizzled black hue, with a whitish band on the neck. It lives in burrows, and its habits are nocturnal. Its food consists of roots, fruits, tender leaves, and other vegetable substances. The common Porcupine is found in Spain, Sicily, Italy, and Northern Africa, from which country it is said to have been imported into Europe. There are several species, the chief being the Canadian, the Brazilian which has a long prehensile tail like an Opossum, and the Fasciculated, a native of India, so called from its peculiar tail.

The OPOSSUMS consist of about forty species, most of which inhabit South America and the Southern part of North America. The largest is scarcely as large as the domestic cat, and several are as small as mice. Their habits are arboreal. The young, in the earlier stage of their existence, are carried in the pouch of the mother, which they sometimes quit, but return to in times of danger; but in some species the pouch is wanting, or exists merely in a rudimentary state, being represented by small folds of skin. The young, when very small, remain attached to the nipple of the

THE VIRGINIAN OPOSSUM.



JERBOAS.

parent, but when of larger size they quit this, and are carried on her back, where they hold themselves by entwining their prehensile tails around that of the parent. The Virginian Opossum (*Didelphys Virginiana*, Linn.), the best known species, and one of the largest and finest of its race, is about the size of a cat, of a grey hue or dull white, and has the fur thick and soft, the mouth wide, the eyes small, and the nose sharp and long. It rests during the day on the branches and in the hollows of trees, and prowls about at night, killing small animals, birds, and poultry, and sucking their blood without eating their flesh. It also feeds on reptiles, insects, eggs, vegetables and fruit, and specimens in the Zoological Society's Gardens have been fed on bread and milk. When attacked it will feign death, deceiving even dogs, which will turn it over and pass it by, and not even beating will induce it to show any signs of life.

The JERBOA (*Dipus*) on a very small scale resembles the kangaroo, in general contour and the relative proportion of its limbs, the hinder being even smaller in proportion than in that animal. The long tufted tail assists in keeping the animal's balance in leaping, which it does with such speed as to deceive the eye and appear during its successive leaps as if constantly erect. It is about the size of a large rat, has soft sleek fur of a pale tawny yellow, the tuft of the tail being black, and when feeding sits up on its haunches like the squirrel. The Jerboas are natives of the sandy deserts of Asia and Northern Africa. There are several species; and their habits are frugivorous, burrowing, and nocturnal.

WOMBATS.

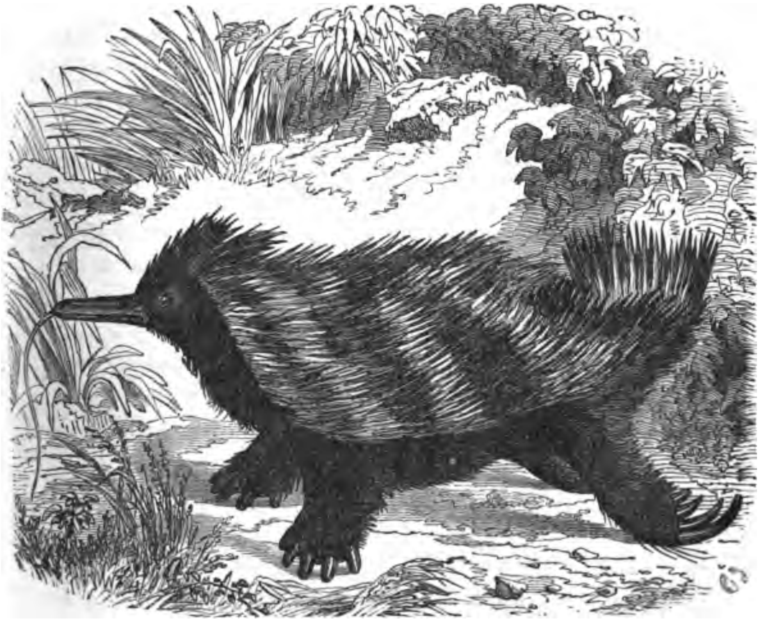
CHAPTER XV.

THE WOMBAT—THE ASHY KOALA—THE ECHIDNA.

THE WOMBAT is found in New South Wales, South Australia, and Van Diemen's Land, as well as in some of the islands in Bass's Straits, and is described by Captain Bass as "a squat, short, thick, short-legged, rather inactive quadruped, with great appearance of stumpy strength, and somewhat bigger than a large turn-spit dog. Its figure and movements, if they do not exactly resemble those of the bear, at least, strongly remind one of that animal. The hair is coarse; the colour of it a light sandy brown of varying shades, but darkest along the back. Its pace is hobbling or shuffling, something like the awkward gait of a bear. In disposition it is mild and gentle, as becomes a grass-eater; but it bites hard, and is furious when provoked. Mr. Bass never heard its voice but at that time; it was a low cry between a hissing and a whizzing, which could not be heard at a distance of more than thirty or forty yards. He chased one, and with his hands under his belly suddenly lifted him off the ground without hurting him, and laid him upon his back along his arm like a child. It made no noise, nor any effort to escape, not even a struggle. Its countenance was placid and undisturbed, and it seemed as contented as if it had been nursed by Mr. Bass from its infancy. He carried the beast upwards of a mile, and often shifted him from arm to arm, sometimes laying him upon his shoulder; all of which he took in good part; until being obliged to secure his legs while he went into the bush to cut a specimen of a new wood the creature's anger arose with the pinching of the twine; he whizzed with all his might, kicked and scratched most furiously, and snapped off a piece from the elbow of Mr. Bass's jacket with his grass-cutting

THE ASHY KOALA.

teeth. Their friendship was here at an end, and the creature remained implacable all the way to the boat, ceasing to kick only when he was exhausted." It is a burrowing animal, and feeds chiefly upon roots and grass. Its flesh is excellent, resembling pork, in its fatness and flavour, though not in colour, being red and coarse.



THE ECHIDNA.

The Ashy Koala is a native of New South Wales, and is somewhat rare. It is as large as a moderate-sized dog, and has long, thick, and rather coarse hair, of an ashy-brown colour, that of its tufted ears being rather lighter. The Koala climbs trees, and feeds upon the leaves, buds, and fruit, It is said to resemble a small bear in its mode of climbing. The female carries her young one on her back, when it is capable of leaving the pouch, until it has attained a considerable size.

The ECHIDNA is about the size of the hedgehog, which it resembles in being covered with spines. They are of a dirty yellowish-white colour, but blackish at the point, and nearly two inches long. The head, legs, and the whole of the under parts, as well as the sides of the body, are well clothed with very stiff and bristly blackish brown hairs. Its head is elongated and the skin of its beak-like muzzle is thick and destitute of hair. The opening of the mouth is remarkably small. It has no teeth. The tongue is slender and very long, and the animal has the power of protruding it to a considerable distance. It lives upon insects, which, like the ant-eaters, it procures by means of its tongue, which is always covered with a viscous matter. It burrows with great rapidity and is provided with broad strong claws on the fore-feet for digging out the earth, and large hollow claws on the hind foot to enable the animal to cast away the loose soil, and to accomplish this, the foot is twisted in such a manner that the sides of these claws lie on the ground, and the concave part is behind. It is found in Australia and Tasmania.

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